The PHOTOFACT® Servicer

SET 549 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ OCT. 1961

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This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

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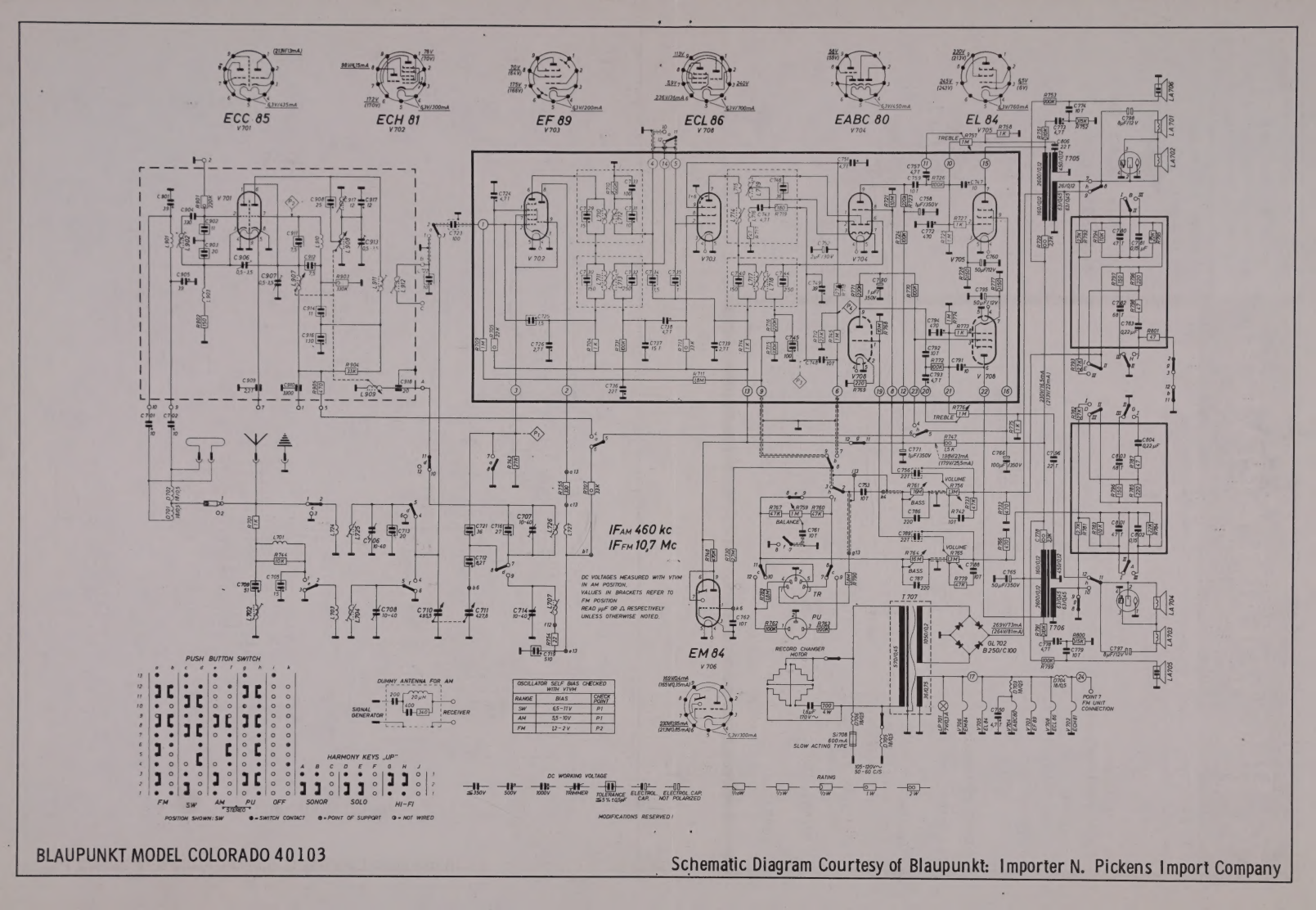
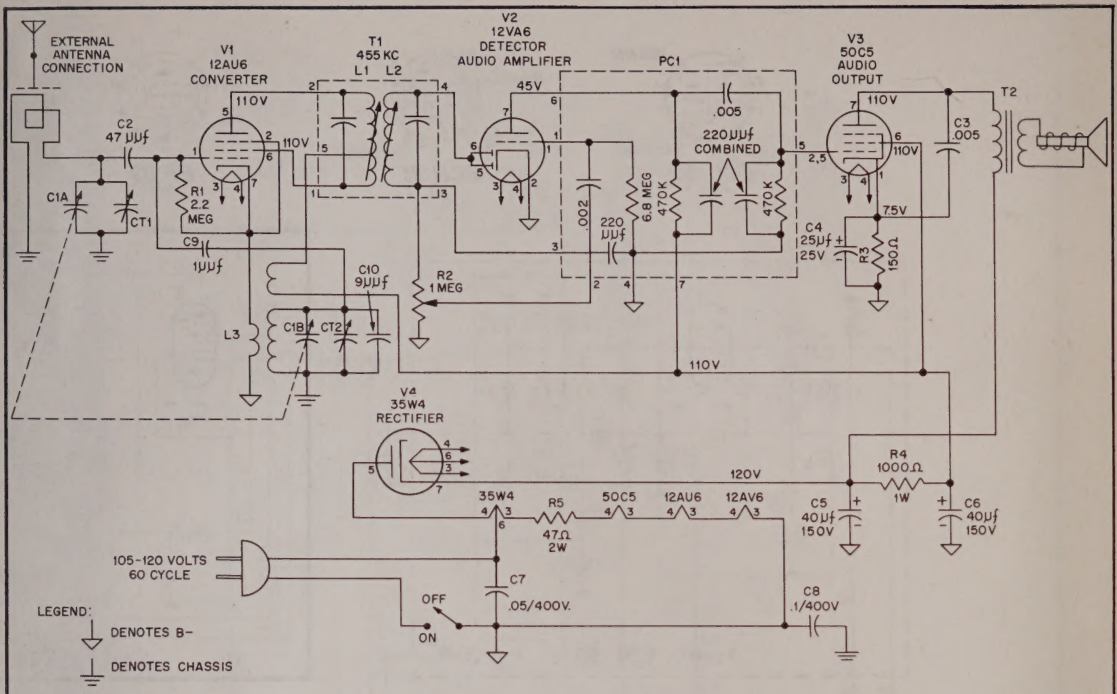
Olympic Model 404

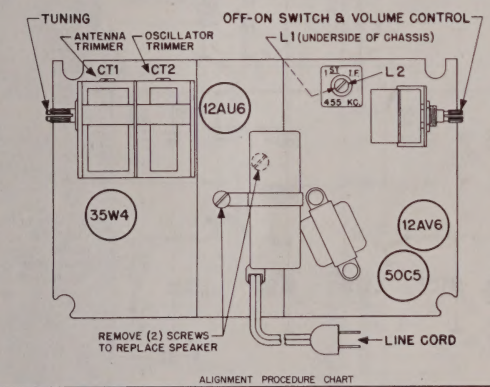


BLAUPUNKT MODEL COLORADO 40103

Schematic Diagram Courtesy of Blaupunkt: Importer N. Pickens Import Company



TUBE & TRIMMER LAYOUT



ALIGNMENT PROCEDURE CHART

STEP	CONNECT HIGH SIDE OF SIGNAL GENERATOR TO-	SET SIGNAL GENERATOR TO-	TURN RECEIVER DIAL TO-	ADJUST THE FOLLOWING FOR MAXIMUM OUTPUT. (KEEP SIGNAL FROM SIGNAL GENERATOR AS LOW AS POSSIBLE.)
1	ANTENNA SECTION TUNING CONDENSER IN SERIES WITH .1 MFD. COND.	455 KC.	FULL COUNTER-CLOCKWISE POSITION (CONDENSER PLATES FULLY OPEN)	L2 AND L1 IN SAME ORDER (I.F. TRANSFORMER)
2	USE RADIATED SIGNAL	1620 KC.		CT2 (OSCILLATOR TRIMMER)
3		1500 KC.	MAXIMUM SIGNAL APPROX. 1500 KC.	CT1 (ANTENNA TRIMMER)
4		REPEAT STEPS 2 AND 3		

REF. NO.	DESCRIPTION	PART NO.
C1	Condenser, 2 Gang, Variable	CV3534
C2	Condenser, 47 uuf±20%	RCM20A470M
C3	Condenser, 5000 uuf, Disc Ceramic	CCD502X
C4-C5-C6	Condenser, 25/25v x 40/150v x 40/150v, Electrolytic	CO4283
C7	Condenser, .047/400v, Paper	CO-B-4473
C8	Condenser, .1/400v, Tubular	CO-H-4104
C9	Condenser, 1 uuf±20%, Gimmick	CO311
C10	Condenser, Special, 9uuf ±10%, N3300	CCR-Y-090K
L3	Oscillator Coil	CL4284
PC1	Audet Network	PC2477
R1	Resistor, 2.2 megohms±20%, 1/2 watt	REB225M
R2	Volume Control, 1 megohm (with switch)	PT3540
R3	Resistor, 150 ohms±20%, 1/2 watt	REB151M
R4	Resistor, 1000 ohms±20%, 1 watt	REC102M
R5	Resistor, 47 ohms±20%, 2 watt	RED470M
T1	Transformer, IF (455 kc)	TR4285
T2	Transformer, Output	TR4286
	Antenna Loop	LP4287
	Cabinet: Blue; Kelly Green; Pink; Red; Yellow; Walnut	CA3483-1B; -1KG; -1P; -1R; -1Y; -1W
	Knob, Volume: Blue; Kelly Green; Pink; Red; Yellow; Walnut	KN3490-1B; -1KG; -1P; -1R; -1Y; -1W
	Knob, Tuning: Blue; Kelly Green; Pink; Red; Yellow; Walnut	KN3491-1B; -1KG; -1P; -1R; -1Y; -1W
	Line Cord	LC3430
	Speaker, 4 inch P.M.	SK3541

OLYMPIC MODEL 404

Information Courtesy of Olympic Radio & Television Inc.

PHOTOFACT® Folder

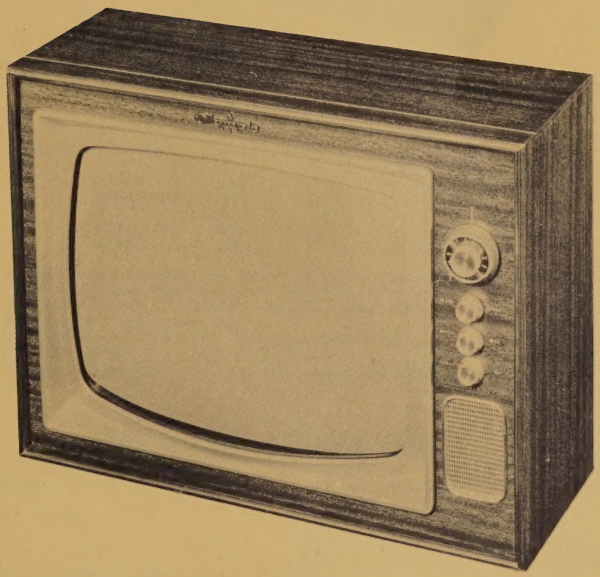
OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

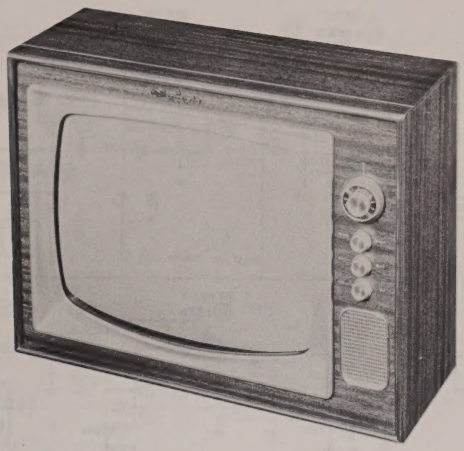


OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

MODEL 9TZ13

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



MODEL 9TZ13

TRADE NAME	OLYMPIC	Models	Chassis	VHF Tuner	Remote Control Receiver	Remote Control Transmitter
		CW350	KW	CL26707		
		CW350/UHF	KWU	CL27206		
		9TZ13	KZ	CL27166		
		9TZ13/UHF	KZU	CL27206		
		9TRZ14	KRZ	CL27166	RBA	TR-1
MANUFACTURER	Olympic Radio & Television Inc., Div. of the Siegler Corp., Long Island City 1, New York					
TYPE SET	Television Receiver (KRZ Chassis with Remote Control)					
TUBES	TV: VHF - Fourteen Remote Control Receiver: Three					
TRANSISTOR	Remote Control Transmitter: One					
POWER SUPPLY	TV & Remote Control Receiver: 110-120 Volts AC, 60 Cycle.					
RATING	TV (VHF) - 140 Watts, 1.4 Amp. @ 117 Volts AC					
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)					

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove chassis and picture tube.

FUSE

A ½ Amp. fuse is used for horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. For location, See M4 in photo, page 5.

FUSE DEVICE

A fusible resistor (some versions may use two) is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up the VHF Oscillator, remove Channel Selector and Fine Tuning knobs.

AGC

The AGC may be varied by means of a Stability (AGC) Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points on Terminal board.

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Frequency Slug (B1). (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive Trimmer. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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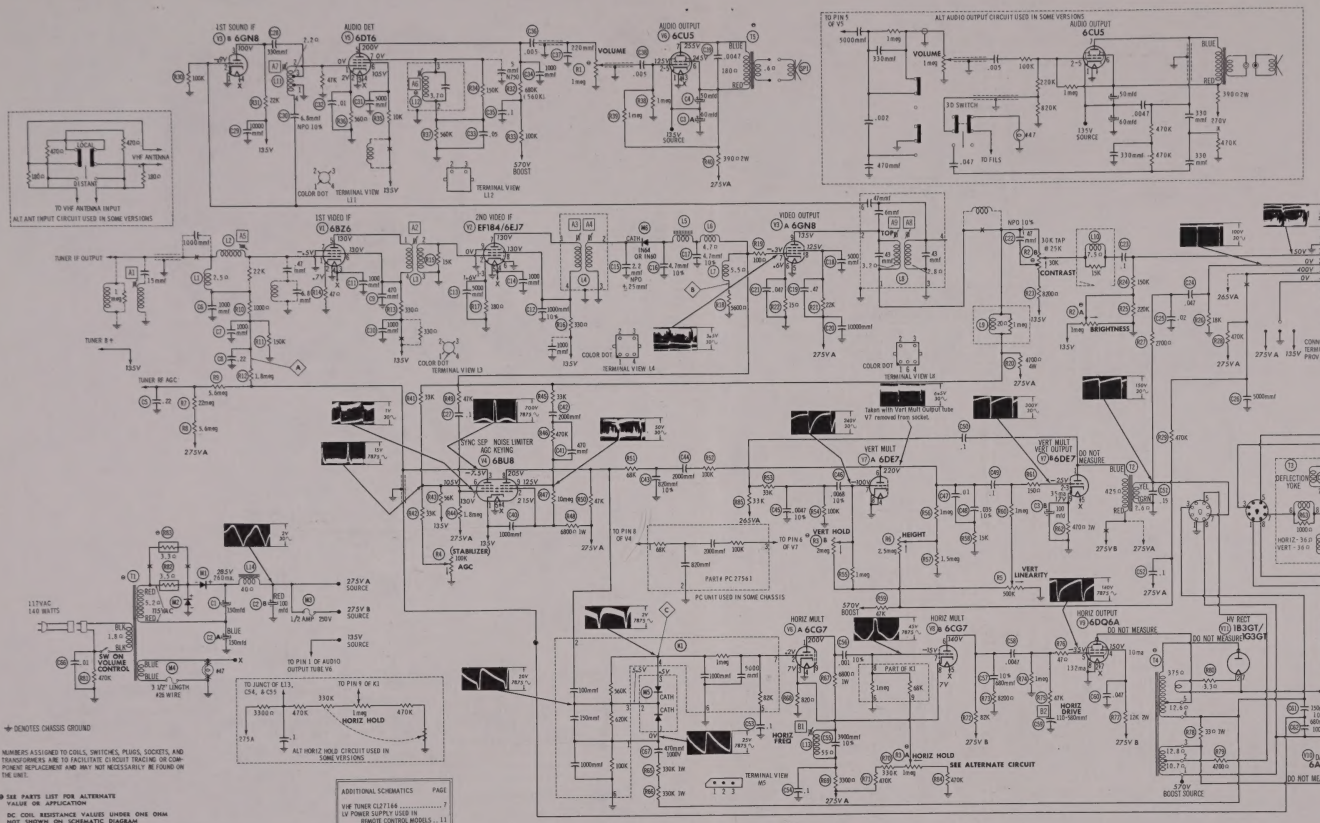
KA634

OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

SET 549 FOLDER 1


1ST SOUND IF
V1 B 6GN8
AUDIO DET
V6 6DT6
VOLUME
AUDIO OUTPUT
V6 6CU5
ALT AUDIO OUTPUT CIRCUIT USED IN SOME VERSIONS
TO PIN 5 OF V9
3D SWITCH
TO FILS
VHF ANTENNA
DISTANCE
TO VHF ANTENNA INPUT
ALT ANT INPUT CIRCUIT USED IN SOME VERSIONS
COLOR DOT
TERMINAL VIEW L11
TERMINAL VIEW L12
570V BOOST
275VA
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 EF184/6EJ7
VIDEO OUTPUT
V5 A 6GN8
TUNER IF OUTPUT
TUNER B+
TUNER RF AGC
COLOR DOT TERMINAL VIEW L3
TERMINAL VIEW L4
TERMINAL VIEW L6
NPO 10%
30K TAP @ 25K
CONTRAST
BRIGHTNESS
PICTURE TUBE
V15 19XP4
CONNECT PIN 4 TO TERMINAL WHICH PROVIDES BEST FOCUS
Taken with Vert Mult Output tube V7 removed from socket.
SYNC SEP NOISE LIMITER AGC KEYING
V4 6BU8
VERT MULT
V7 A 6DE7
VERT MULT VERT OUTPUT
V7 B 6DE7
DO NOT MEASURE
DEFLECTION YOKE
HORIZ-360 VERT-360
TO PIN 8 OF V4
TO PIN 6 OF V7
PART# PC27561
PC UNIT USED IN SOME CHASSIS
VERT HOLD
HEIGHT
VERT LINEARITY
(STABILIZER) AGC
117VAC 140 WATTS
1/5 AMP 250V
SW ON VOLUME CONTROL
3 1/2" LENGTH #26 WIRE
275V A SOURCE
275V B SOURCE
135V SOURCE
TO PIN 1 OF AUDIO OUTPUT TUBE V6
TO JUNCT OF L13, C54, & C55
TO PIN 9 OF K1
HORIZ HOLD
ALT HORIZ HOLD CIRCUIT USED IN SOME VERSIONS
HORIZ MULT
V8 A 6CG7
V8 B 6CG7
HORIZ OUTPUT
V9 6DQ6A
HORIZ FREQ
HORIZ DRIVE
HORIZ HOLD
SEE ALTERNATE CIRCUIT
TERMINAL VIEW M5
HV RECT
V10 1B3GT/1G3GT
HV TRANSFORMER TERMINAL VIEW T8 (VIEWED FROM WIRING SIDE OF CHASSIS)
TO PICTURE TUBE HV ANODE (14.5KV-15KV) 13KV
DAMPER 6AX4GT
DO NOT MEASURE
BOOST SOURCE
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATICS PAGE
VHF TUNER CL27164 7
LV POWER SUPPLY USED IN REMOTE CONTROL MODELS .. 11
REMOTE CONTROL RECEIVER RBA AND TRANSMITTER TR-1 11
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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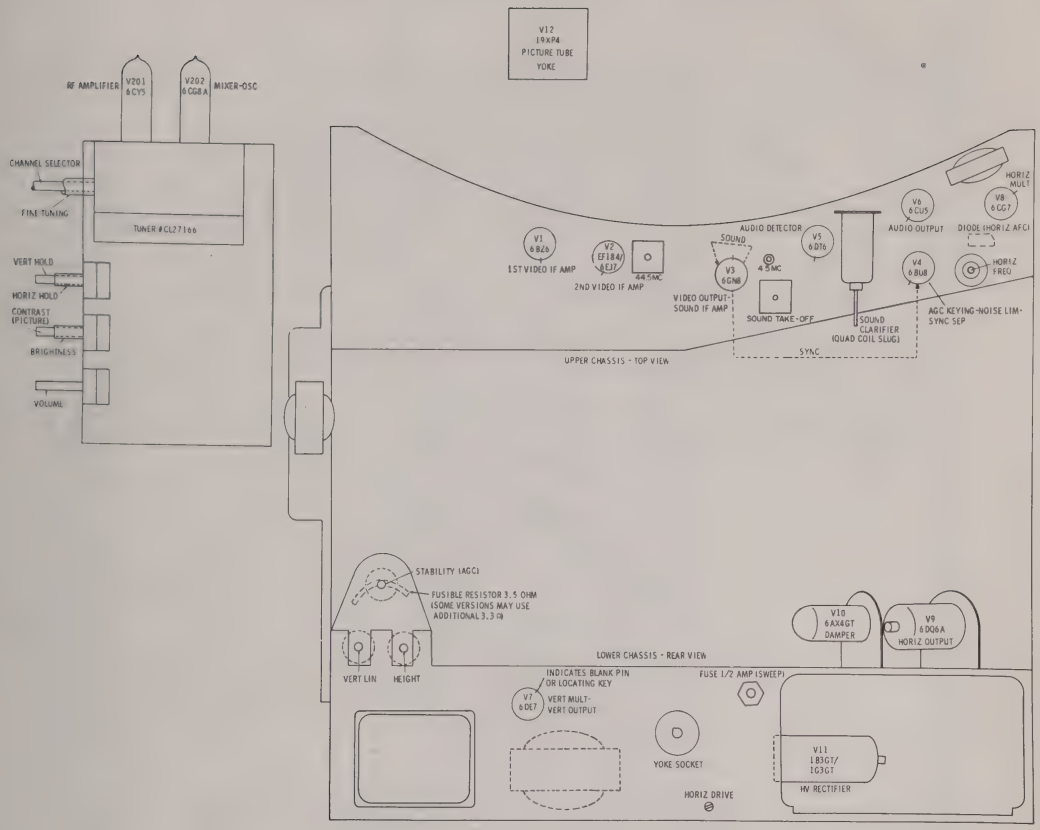
OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse Wire (Fil.), Rectifiers M1, M2
Resistor, fusible 3.5Ω, & fusible 3.3Ω in some versions.

SWEEP FAILURE
No raster, has sound Fuse (Sweep), V8, V9, V10, V11, V12
No vertical deflection V7
Poor vert. linearity or foldover V7
Poor horiz. linearity or foldover V8, V9, V10
Narrow picture V8, V9, V10, M1, M2
Vert. off freq. V7
Horiz. off freq. Diode (Horiz. AFC), V8

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3, V6
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V12
Has pic, no sound V3, V5, V6
Overloaded picture V4

SYNC FAILURE
No vert. sync V4
No horiz. sync V4, Diode (Horiz. AFC)
No vert. or horiz. sync V4

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A1 thru A5, A8, A9 .... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A6, A7 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Place a thin insulated metal strip between the Mixer-Osc. tube and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp.)	43.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point (B). Low side to chassis.	A1, A2, A3, A4, A5 and Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust A1 (not used in some versions) to place 47.25MC marker in trap notch, A2 and A3 for maximum amplitude, A4 for high frequency side and A5 and Mixer Plate Coil for low frequency side.

SOUND IF ALIGNMENT

Turn the set on and tune in a strong TV signal. Adjust A6 for maximum sound output. Disconnect the antenna to provide a weak signal. If this does not provide enough signal to be heard, it may be necessary to insert an adjustable attenuator in series with the antenna and connect to the receiver. Adjust A7 and A8 for maximum sound output. Connect the antenna direct and retouch A6 for maximum sound output.

4.5MC TRAP ALIGNMENT

Tune in a strong TV signal and set Contrast at maximum. Adjust the Fine Tuning until a beat pattern is visible. Adjust A9 for MINIMUM beat interference.

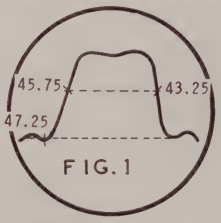
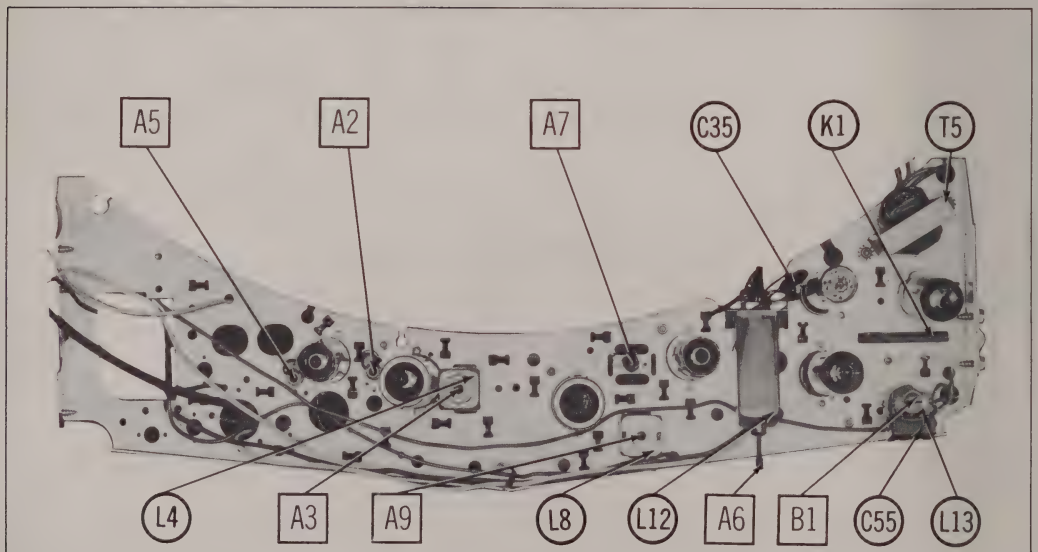
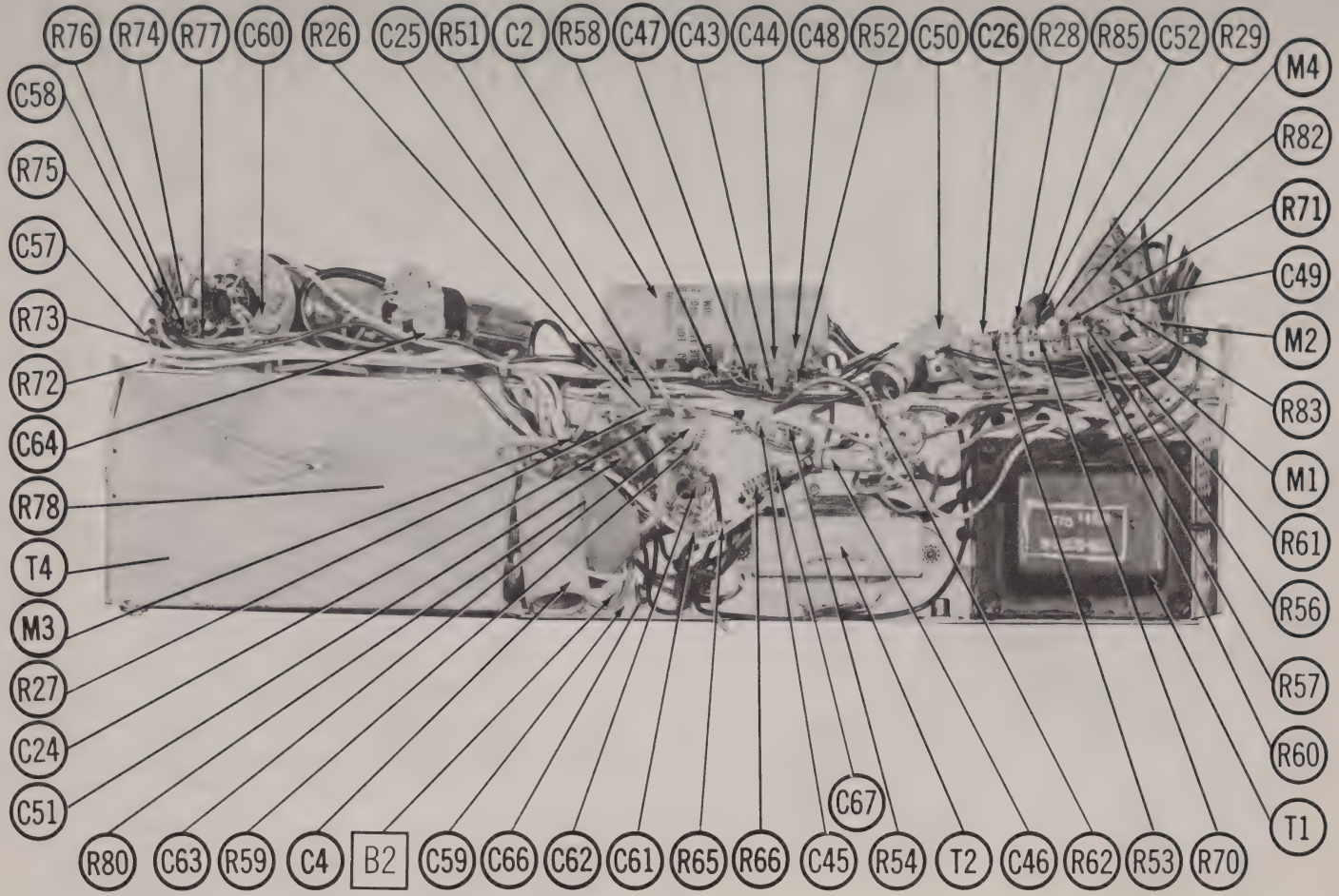


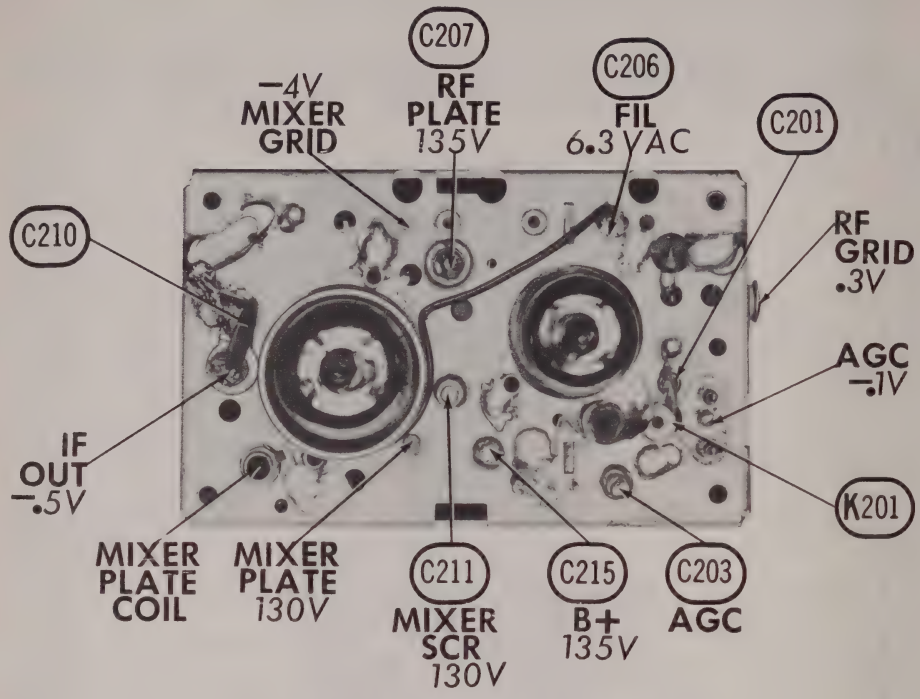
FIG. 1



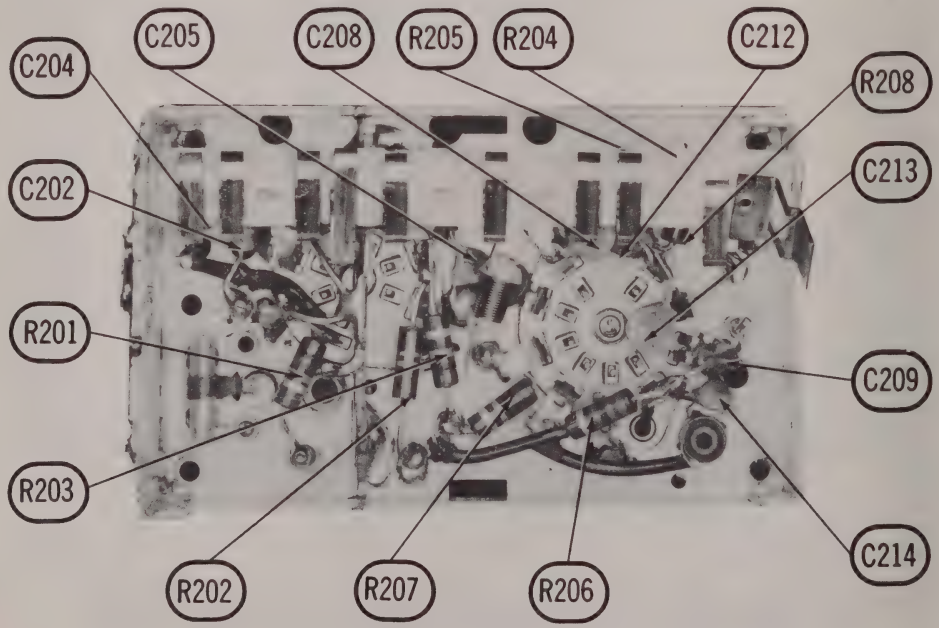
UPPER CHASSIS—TOP VIEW



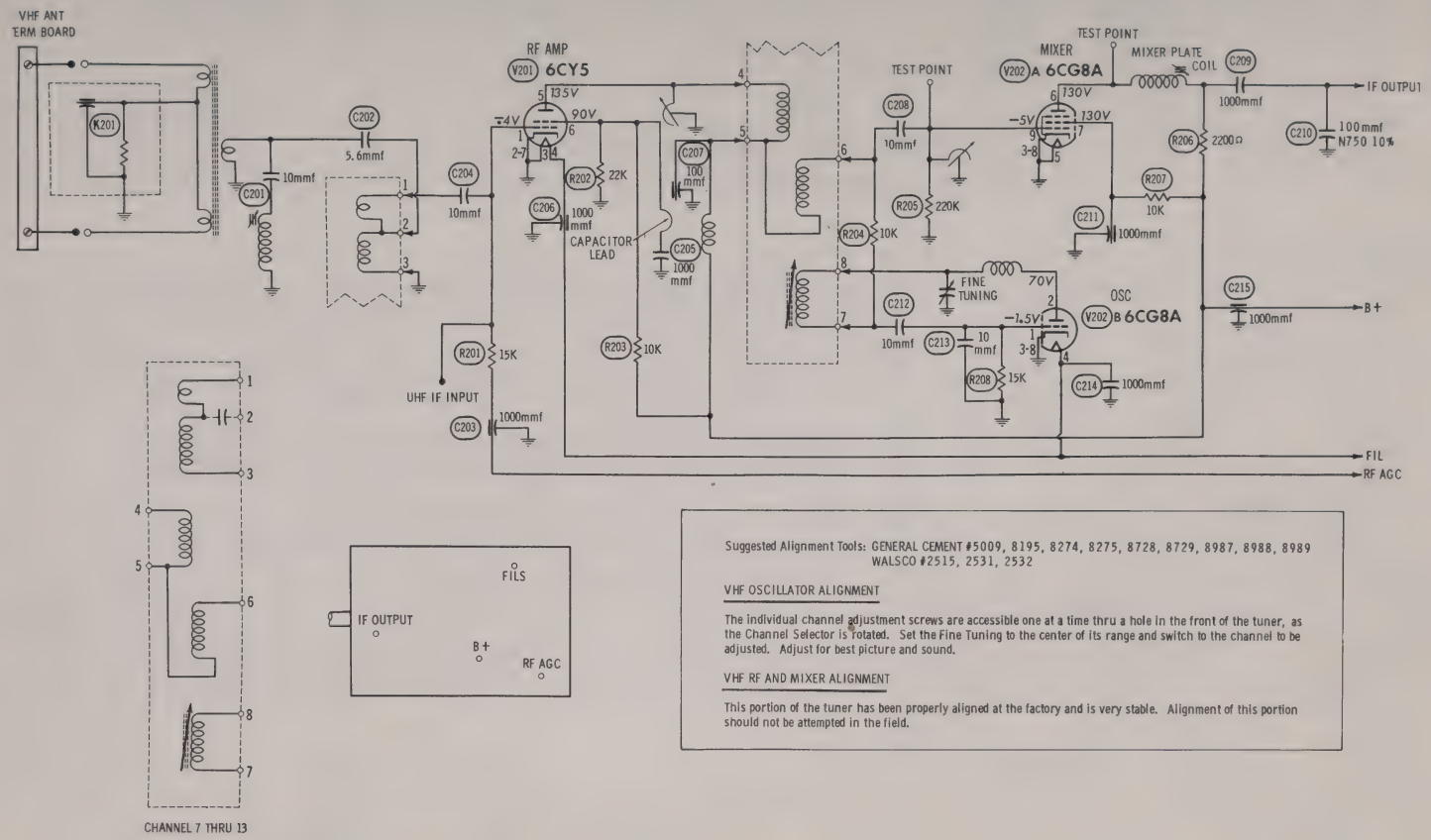
LOWER CHASSIS - FRONT VIEW



VHF TUNER CL27166 - TOP VIEW



VHF TUNER CL27166 - BOTTOM VIEW



Suggested Alignment Tools: GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF OSCILLATOR ALIGNMENT

The individual channel adjustment screws are accessible one at a time thru a hole in the front of the tuner, as the Channel Selector is rotated. Set the Fine Tuning to the center of its range and switch to the channel to be adjusted. Adjust for best picture and sound.

VHF RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER CL27166

OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC • USE	TYPE	ITEM No	RAYTHEON • USE	TYPE	ITEM No	SYLVANIA • USE	TYPE
V1	1st. Video IF Amp.	6BZ4	V6	Audio Output	6CU5			
V2	2nd Video IF Amp.	EF184/6EJ7	V7	Vert. Mult.- Vert. Output		6DE7		
V3	Video Output - Sound IF Amp.	6GN6	V8	Horiz. Mult.		6CG7		
V4	AGC Keying - Noise Lim. - Sync Sep.	6BU8	V9	Horiz. Output		6DQ6A		
V5	Audio Detector	6DT6	V10	Damper		6AX4GT		
			V11	HV Rectifier		1B3GT/1G3GT		

PICTURE TUBE

ITEM No.	REPLACEMENT DATA: OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V12	19XP4	19XP4	19XP4 ①		19XP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP	VOLT	OLYMPIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	300	CO-26294	PRI-100		TC932	TU150-300	TVA5-1447 *	
C3A	150	300	CO-26299	PRI-790	BBRD0386	WG830	CDB-D-1064	TVA5-2590 *	
B	100	150							
C3A	60	300	CO-26300	PRI-300	BBRD0676	WD940		TVA-3711	
B	100	88							
C4	50	350	CO-2068-3	PRR5S5	BRR5035	TC59	TD-50-450	TVA-1713	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.22	200V		P88N-22		CUB2F22	2DP-4-224	GEM-4023	2TM-P22
C6	.001			BPD-001 ④	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C7	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C9	.22	200V		P88N-22		CUB2F22	2DP-4-224	GEM-2022	2TM-P22
C9	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C10	470			DE-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C11	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C12	.001	10%		DE-1000	DD-102	SR1K	CCD-102	GP1E0	10TS-D10
C13	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C15	2.2	NPO ±.25mmf		NPO-DI 2.2	DTZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C16	4.7	10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C17	4.7	10%		NPO-DI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C18	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	.47	200V		P88N-47		CUB2P47	2DP-4-474	GEM-2047	2TM-P47
C20	.01			BPD-01	DD-103	BYA10DI	CCD-103	B-310	5HK-E10
C22	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C23	47	NPO	5%		DTZ-47	C10Q47C	CCTO-470	CNO-447	10TCC-Q47
C23	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C24	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C25	.02	400V		P488N-02	DD-303	CUB423	4DP-2-203	GEM-413	4TM-S20
C26	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C28	330			DL-330	DJ-331	L10T33	CCD-331	B-333	10TS-T33
C29	.01			BPD-01	DD-103	BYA10DI	CCD-103	B-310	5HK-E10
C30	6.8	NPO	10%	NPO-DI 6.8	DTZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C31	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C32	.01			BPD-01	DD-103	BYA10DI	CCD-103	B-310	5HK-E10
C33	.05	30V		P36N-05	DD-503	CUB235	3DP-3-503	GEM-415	3TM-S50
C34	.001			BPD-001	DD-103	BYA10DI	CCD-102	B-210	5HK-D10
C35	.1	600V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C36	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C37	220			DL-220	DD-221	L10T22	CCD-221	B-222	10TS-T22
C38	.005			BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C39	.0047	600V		P668N-0047	DE-473	CUB6D47	6DP-1-473	GEM-6247	6TM-D47
C40	.001			BPD-001	DD-102	BYA10DI	CCD-102	B-210	5HK-D10
C41	470			DE-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C42	.002			BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C43	220		10%	DE-220	DD-221	SR5T22	CCD-221	GP322	10TS-T22
C44	.002			BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C45	.0047	600V	10%	V6C6D47-10%		P68D47	6DP-1-472	GEM-16247	6TM-D47
C46	.0068	600V	10%	V6C6D47-10%		P68D68	6DP-1-682	GEM-16268	6TM-D68
C47	.01			BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C48	.035	800V	10%	P864CM-033		P8E833	8DP-3-333		8TM-S35
C49	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C50	.1	600V		P668N-1	DF-104	CUB6P1	6DP-3-104	GEM-601	6TM-P10
C51	.15	400V		P488N-15		CUB4P15	4DP-4-154	GEM-4015	4TM-P15
C52	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C53	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C54	.1	400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C55	.0039	1500V	10%	1494-0039		B1SD39	CM-2GD-392K	MC2463.9	M3-392
C56	.001	600V	10%	V6C6D1-10%		P6E1K	6DP-1-102	GEM-6132	6TM-D10
C57	680		10%	1469-00068		SR5T68	CM-19B-681K	MC2J69	M3-68
C58	.0047	600V		P668N-0047	D6-473	CUB6D47	6DP-1-473	GEM-6247	6TM-D47
C59	110-580		#CT2536				467		
C60	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C61	150	3000V	10%	#CO3830					
C62	680	1000V		DL-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C63	.047	400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C64	.01			BPD-01	DD-103	BYA10DI	CCD-103	B-110	5HK-E10
C65	100	3000V	10%	#CO3781					
C66	.01	600V		P668N-01	DE-103	CUB6E1	6DP-2-103	GEM-611	6TM-E10
C67	470	1000V		DL-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47

◊ Olympic Part Number

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	PT2732B ①	B-70-S	A47-1meg-Z	Q3-137	U53	Volume
B	Shaft			Not Req.	E38-3	Not Req.	Not Req.	
C	Switch			Not Req.	SW2-13	78-1	U5-26	Power Off-On

CONTROLS (cont)

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: OLYMPIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R2A	1meg	½	PT2732T ②					
B	30K	½				†Q1-1548		Brightness
	25K Tap							Contrast
R3A	1meg	½	PT2732S ②	F1-51				
B	2meg	½		R2-67		†Q1-1547	•UF4235	Horiz. Hold
R4A	100K	½	PT2731J	TT-40	B47-100K-S	Bil-138	PTA15L	Vert. Hold
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	AGC (Stability)
R5A	500K	½	PT2579D	TT-58	B47-500K-S	Bil-132	PTA55L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6	2.5meg	½	PT5008-1	TT-83	B47-2.5meg-S	RLC-3	TA25S1	Height

① Ch. KW, KWU use 30K w/Tap Contrast, 1meg Volume (Part #PT3051).
② Ch. KW, KWU use 1.5meg Brightness (Part #PT5703).
Ch. KRZ, KWU use 1.5meg Brightness 30K w/Tap Contrast (Part #PT2732R).
③ Ch. KRZ, KWU use 1meg Horiz. Hold, 1meg Vert. Hold (Part #PT2732S).
Ch. KW, KWU use 2 meg Vert. Hold (Part #PT2643S).
Ch. KW, KWU use 1meg Horiz. Hold (Part #PT2643S).
† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: Bil-137, PtT-105 (Panel) B20-11JX, R1-122 (Rear)
† "CONCENTRIKIT" Equivalent: K-15 Kit with Base Elements and Shafts: Bil-137, PtT-105 (Panel) Bil-139, R1-122 (Rear)
(Not available as a factory assembled unit).
▪ "STA-LOC" Equivalent: FB16L, RU35L, G8117, E2687.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	22meg			
R8	5.6meg			
R9	5.6meg			
R10	1000Ω			
R11	150K			
R12	1.6meg			
R13	330Ω			
R14	47Ω			
R15	15K			
R16	330Ω			
R17	180Ω			
R18	5600Ω			
R19	100Ω			
R20	4700Ω 4W	PW4-4700	4G-4700	
R21	22K 2W			
R22	15Ω			
R23	8200Ω			
R24	150K			
R25	220K			
R26	18K			
R27	2700Ω			
R28	470K			
R29	470K			
R30	100K			
R31	22K			
R33	680K			(560K) *
R35	100K			
R36	560Ω			
R37	560K			
R38	1meg			
R39	1meg			
R40	390Ω 2W			
R41	33K			
R42	33K			
R43	56K			
R44	1.8meg			
R45	33K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	WORKMAN TV PART No.	REMARKS
R46	470K			
R47	18meg			
R48	6800Ω 1W			
R49	47K			
R50	47K			
R51	68K			
R52	100K			
R53	33K			
R54	100K			
R55	1meg			
R56	1meg			
R57	1.5meg			
R58	15K			
R59	47K			
R60	1meg			
R61	150Ω			
R62	4700 1W			
R63	1000Ω			
R64	1000Ω			
R65	330K 1W			
R66	330K 1W			
R67	6800Ω 1W			
R68	82KΩ			
R69	3300Ω			
R70	330K			
R71	470K			
R72	82K			
R73	8200Ω			
R74	1meg			
R75	47K			
R76	47Ω			
R77	12K 2W			
R78	33Ω 1W			
R79	4700Ω			
R80	3.3Ω			
R81	470K			
R82	3.5Ω †			#LR27133 Note 1
R83	2.3Ω †			
R84	470K			
R85	33K			

* Alternate Value ◊ Olympic Part Number † Fusible
Note 1: May not be used in some versions.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K1	Horiz. Sweep	100mmf, 150mmf, .001mfd, .001mfd, .001mfd, 1.5meg, 680K, 82K, 100K, 620K, 1meg, 1meg	PC35716	Centralab PC-367

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Peaking (36uh)	CL1535	TV-180	6178	RTC-8593	T301	① Wound on 1meg Resistor
L2	1st Video IF	CL26946	TV-131	6326	RTC-8628	T218	② Wound on 15K Resistor.
L3	2nd Video IF	CL4791	TV-130	6219	RTC-8551	T217	③ Part #CL31052 used in Chassis KW, KWU
L4	3rd Video IF	CL26953					
L5	RF Choke (1.7uh)	CK4225	BC-562	4604	RTC-8518	T856	
L6	Peaking (10uh)	CL26425	TV-194	6112	RTC-8574	T305	
L7	Peaking (16uh)	CL26426	TV-196	6130	RTC-8575	T308	
L8A	4.5MC Trap	TR3386-1					
B	1st Sound IF						
L9	Peaking (790uh)	CL2549I ①	TV-305 †	6143 †	RTC-8583 †	T327 †	† Parallel with 1meg Resistor.
L10	Peaking (350uh)	CL3398 ②	TV-185 *	6181 *	RTC-8598 *	T315 *	* Parallel with 15K Resistor.
L12	2nd Sound IF	CL4021					
L13	Quadrature	CL3603-1 ③	TV-134	1481	RTC-8605	T348	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	◊Miller PART No.	† Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.	NOTES
L13	Horiz. Stabilizer	CL5464-1	TV-163	6210	RTC-8623	R5-5	WLC-25	T103	

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 (%)	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
Lj4	.260A	18Ω	.5 Hy.	CK26651		C-2343 ①		C-36X	① Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ① 1.4A	115V ② .830A AC	6.3V ② 7.7A	TR26214				R-126BC	Chassis KW, KWU, KZ, KZU

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	TR-26216	A-2216 ①	VO-112	26872	A-108X	
T3	Yoke (Horiz. 20MH) (100V) (Vert. 39MH)	CL-26215		DY-46A	Y-53 ②	Y-64-1	
T4	Horiz. Output	TR-26205 †		HVO-171			
	Horiz. Output	TR-26205-1 *					

① Use 8 to 1 Turns Ratio. † Chassis KZ, KZU, KRZ. * Chassis KW, KWU.
② Connect yoke terminal #2 to yoke plug #3; yoke #8 and #3 to plug #6; yoke #7 to plug #8; yoke #4 to plug #1; yoke #6 to plug #7.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	SEC.	REPLACEMENT DATA: OLYMPIC PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	2200Ω	3-4Ω	TR-5630-1	A-3025	A-3332	34S53	S-12X	Chassis KZ, KZU, KRZ

SPEAKER

ITEM No.	TYPE: SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: OLYMPIC PART No.	QUAM PART No.	NOTES
SP1	3½"	PM	3-4Ω	SE32020	3A07	
	4"	PM	3-4Ω	SE4342	4A07	
	6"	PM		SK27053		

POWER RECTIFIERS

ITEM No.	RATING: CURRENT (Measured)	REPLACEMENT DATA: OLYMPIC PART No.	RCA PART No.	SARKES TARZIAN PART No.	NOTES
M1	.280A	RF26235	1N1763	40H	
M2	.360A	RF26235	1N1763	40H	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: OLYMPIC PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M3	C	¼A 250V	FU28203		332.500 (C ¼A 250V)	348003	C ¼	HC 3/10 to ½
M4	½"	length	#26 wire					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA: OLYMPIC PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	NOTES
M5		R75465 *	6GC1 *		* Dual Selenium Diode, Common Cathode Type
M6	1N54 or 1N80	1N54 or 1N80		1N54 or 1N80	Crystal Diode, Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
MT	Tuner	CL27166	VHF, Used in Chassis KZ, KRZ; STANDARD COIL REPLACEMENT #GO-4220A
	Tuner	CL26707	VHF, Used in Chassis KW
	Tuner	CL27206	VHF-UHF, Used in Chassis KZU, KWU.

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8778 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8489 (Round) - 8 Conductor

OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU.

FOLDER 1

VHF PARTS LIST AND DESCRIPTIONS

CL27166

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •			
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6CY5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C202	5.6 10%							10TCC-V56
C203	.001		EF-001	MFT-1000		CCF-102	CT280A	
C204	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C205	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C206	.001		EF-001	MFT-1000		CCF-102	CT280A	
C207	100		EF-0001	MFT-100				
C208	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C209	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C210	100 N750 10%		N750-DI 100	DTN-100	L10T1U	CCTN-101	CN7-310	10TCU-T10
C211	.001		EF-001	MFT-1000		CCF-102	CT280A	
C212	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C213	10		DI-10	DD-100	L10Q1	CCD-100	GP410	10TS-Q10
C214	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C215	.001		EF-001	MFT-1000		CCF-102	CT280A	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	15K				R205	220K			
R202	22K				R206	2200Ω			
R203	10K				R207	110K			
R204	10K				R208	115K			

COMPONENT COMBINATIONS

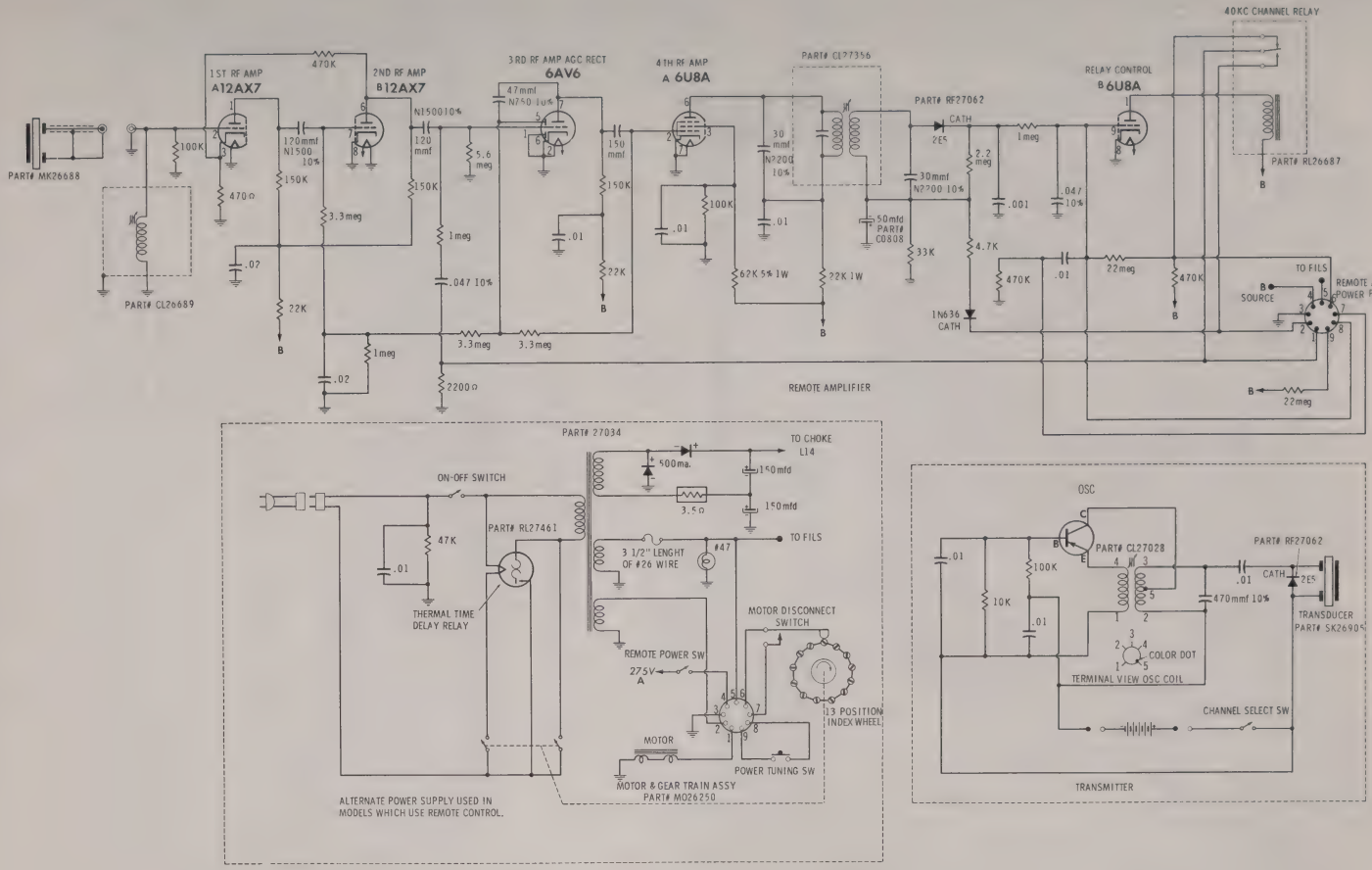
ITEM No.	USE	DESCRIPTION	OLYMPIC PART No.	REPLACEMENT DATA
K201	Antenna Filter			

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. 9TZ13	9TZ13 /UHF	9TRZ14	CW350 & UHF
Mask	MP27306	X	X	X	
Mask	PP27405				X
Safety Glass-Grey	PP-27214-1				X
Safety Glass	PP27305	X	X	X	
Knob-VHF Channel Selector	KN27565	X			
Knob-VHF Channel Selector	KN27572			X	
Knob-VHF Channel Selector	KN28042				X
Knob-Calibrated Dial	KN28061				X
Knob-UHF Channel Selector	KN28046				X
Knob-UHF Channel Selector	KN27575		X		
Knob-Calibrated Dial	KN5898		X		
Knob-Fine Tuning	KN5896		X		
Knob-Fine Tuning	KN28065-1	X		X	
Knob-Fine Tuning	KN28062				X

DESCRIPTION	PART NO.	MODEL NO. 9TZ13	9TZ13 /UHF	9TRZ14	CW350 & UHF
Knob-Power Tuning	KN27573			X	
Knob-Pull	KN27314				X
Knob-Manual, Remote	KN27574			X	
Knob- Music, Speech, 30-Button	KN28066				X
Knob-Brightness	KN28060				X
Knob-Brightness, Horiz. Hold	KN28059	X	X	X	
Knob-Vertical Hold, Contrast	KN28058	X	X		
Knob-Volume	KN28060	X	X	X	
Knob-Contrast	KN28059				X
Knob-Horiz., Vertical Hold	KN28045				X
Cabinet	CA28139				X
Cabinet	CA27302	X	X		
Cabinet	CA27303			X	



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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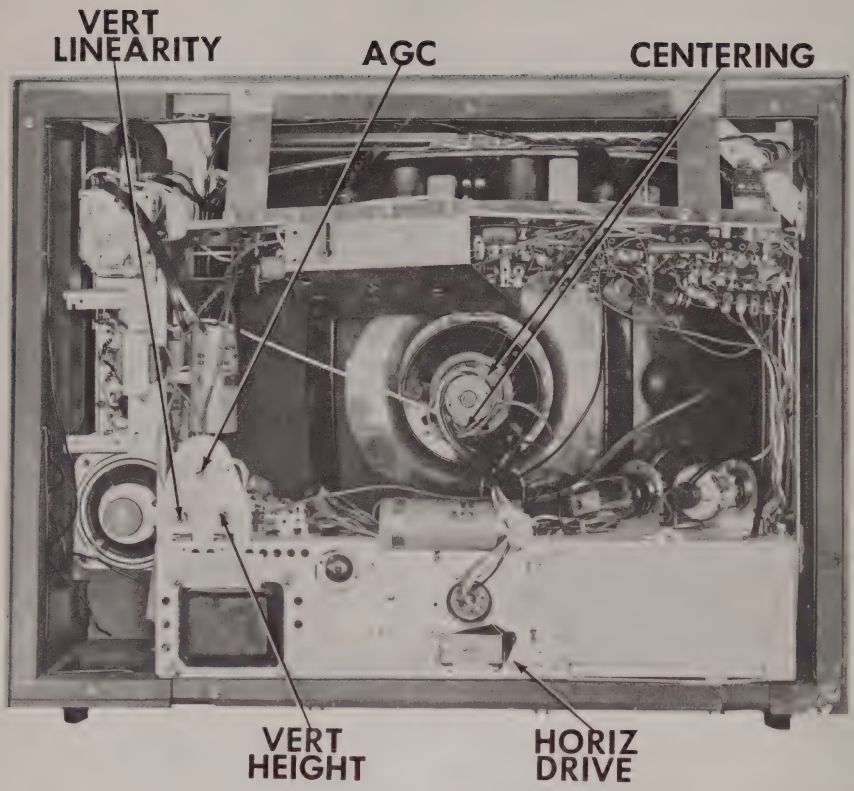
LV POWER SUPPLY USED IN REMOTE CONTROL MODELS
REMOTE CONTROL RECEIVER RBA & TRANSMITTER TR-1

OLYMPIC CHASSIS KRZ, KW, KWU, KZ, KZU



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and allow it to warm up for 2 minutes. Tune in a TV station, preferably with a test pattern.

Connect a clip lead from point ⏚ to chassis. Connect another clip lead across the Horizontal Stabilizer Coil (L13).

Adjust the Horizontal Hold until the picture synchronizes horizontally. (It may float back and forth.)

Remove the clip lead from L13. Adjust the Horizontal Stabilizer Coil slug (B1) until the picture is again in frequency. Remove clip lead from point ⏚ and chassis.

Turn Horizontal Drive Trimmer (B2) counterclockwise until a vertical white line (drive line) appears near the center of the screen, then turn clockwise until line just disappears. If drive line cannot be obtained, adjust B2 for proper width.

If B2 is adjusted, recheck adjustment of B1 and Horizontal Hold.

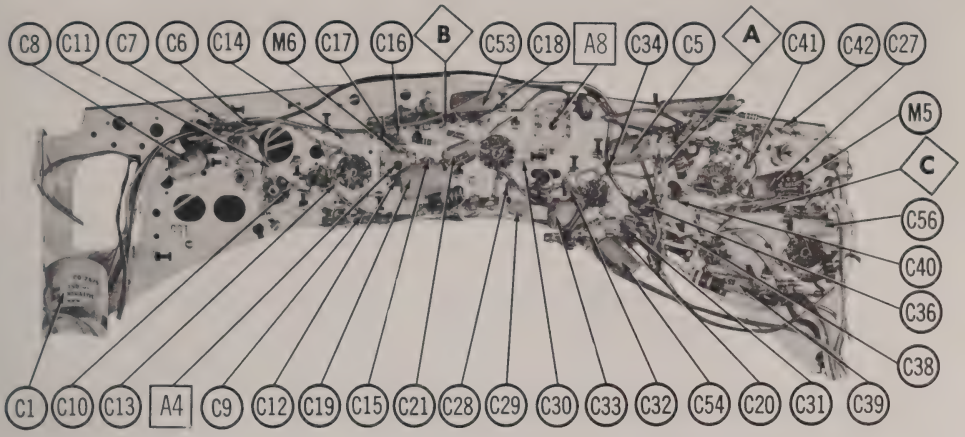
DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

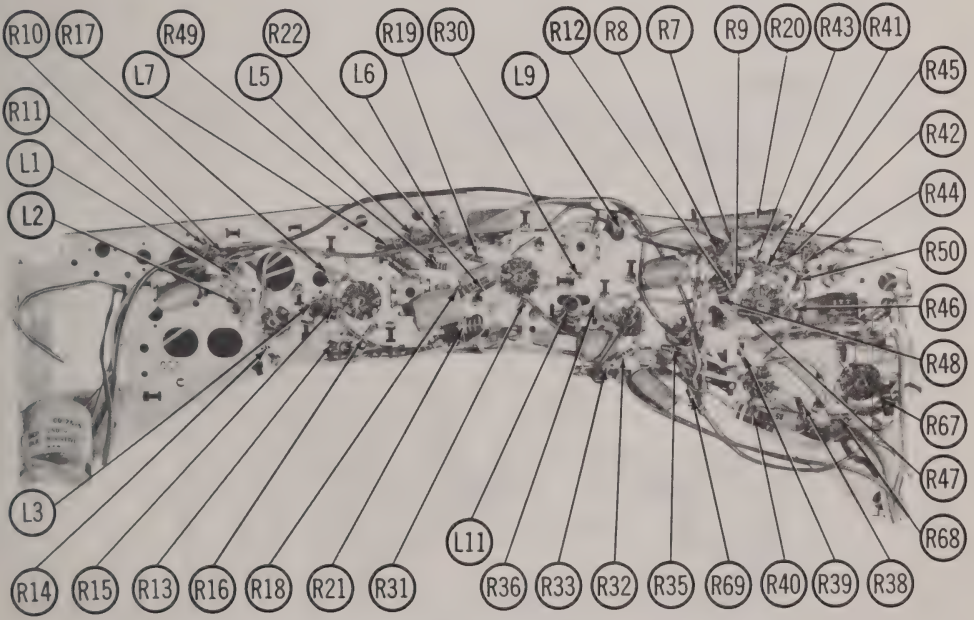
1. Remove 9 screws holding rear cover. Remove rear cover.
2. Remove 7 push-on type knobs on front.
3. Remove screw below tuner shaft (at front).
4. Remove 2 wood screws in brackets at top rear of cabinet.
5. Remove 3 chassis bolts.
6. Remove picture tube socket, yoke plug, speaker leads and HV lead.
7. Pull chassis straight back.

PICTURE TUBE REMOVAL

It is necessary to remove chassis for picture tube removal.



UPPER CHASSIS BOTTOM VIEW - ALIGN., CAPACITOR, MISC. IDENT.



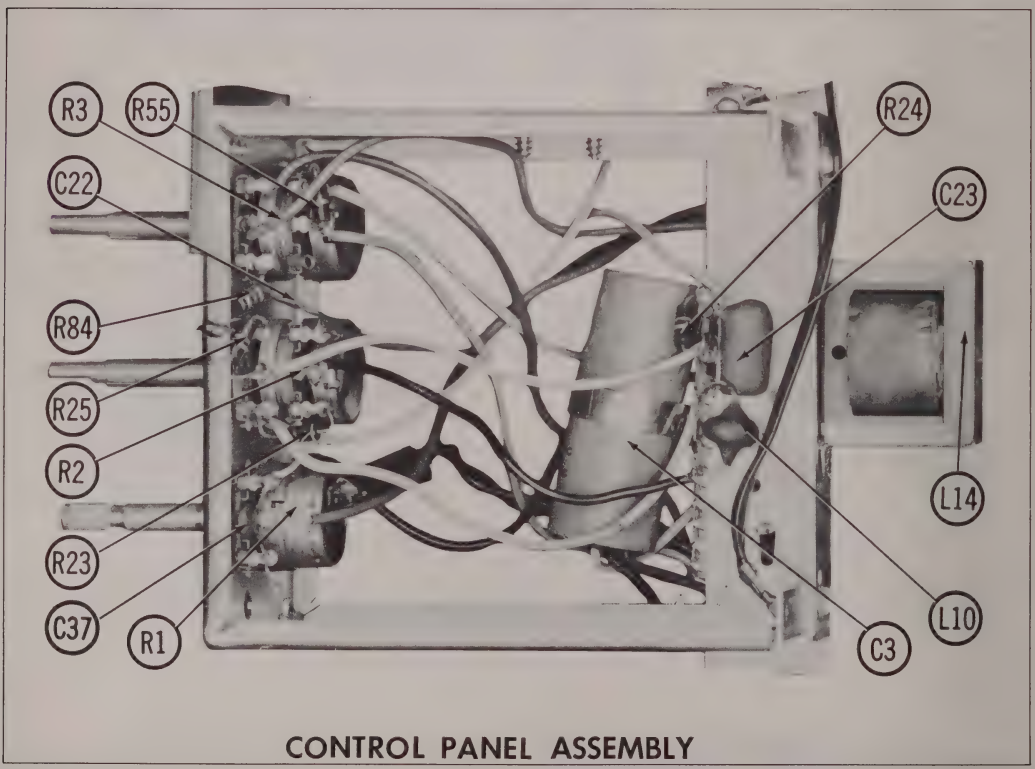
UPPER CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.

TV RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	FIL	FIL	▪330Ω	▪330Ω	0Ω		
V2	EF184/ 6EJ7	180Ω	.1Ω	180Ω	FIL	FIL	0Ω	▪330Ω	▪330Ω	0Ω
V3	6GN8	0Ω	100K	▪22K	FIL	FIL	15Ω	5700Ω	†22K	†4100Ω
V4	6BU8	▪0Ω	†6800Ω	1.9meg	FIL	FIL	▪25K	†1.8meg	†47K	†10meg
V5	6DT6	.2Ω	560Ω	FIL	FIL	†720K	▪10K	560K		
V6	6CU5	¶ 25K	500K	FIL	FIL	500K	†430Ω	†610Ω		
V7	6DE7	†465Ω	NC	• 1.2meg	FIL	FIL	• †1.4meg	• 1meg	0Ω	470Ω
V8	6CG7	†10K	2meg	820Ω	FIL	FIL	†82K	•68K	820Ω	NC
V9	6DQ6A	TP	FIL	TP	†12K	1meg	TP	FIL	0Ω	TOP CAP †45Ω
V10	6AX4GT	NC	NC	†700K	NC	†40Ω	NC	FIL	FIL	
V11	1B3GT/ 1G3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †420Ω
V12	19XP4	FIL	18K	†450K	0Ω	NC	NC	•250K	FIL	
V201	6CY5	6meg	0Ω	FIL	FIL	▪0Ω	▪10K	0Ω		
V202	6CG8A	15K	▪10K	0Ω	FIL	FIL	▪2200Ω	▪10K	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
• THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM OUTPUT OF M1.
‡ MEASURED FROM PIN 3 OF V10.
▪ MEASURED FROM 135V SOURCE.

NC NO CONNECTION
TP TIE POINT



CONTROL PANEL ASSEMBLY

PHOTOFACT® Folder

**ZENITH CHASSIS
17G28Q, S-51864**

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ZENITH CHASSIS
17G28Q, S-51864

MODEL G3360W

ZENITH CHASSIS
17G28Q, S-51864

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

MODEL G3360W

TRADE NAME	ZENITH	Models	TV Chassis	Remote Control Receiver
	G3360W, Y; G3368M, R; G3375L; G3385H		17G28Q	S-51864
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Avenue, Chicago 39, Illinois			
TYPE SET	Television Receiver (with Remote Control)			
TUBES	TV: VHF - Seventeen Remote Control Receiver: Eight			
POWER SUPPLY	110-120 Volts AC, 60 Cycle			
RATING	TV: 195 Watts, 1.75 Amp. @ 117 Volts AC (240 watts, 2.2 Amp. While Tuning) Remote Control Receiver: 35 watts, .35 Amp. @ 117 Volts AC TV & Remote Control Receiver: 230 watts, 2.1 Amp. @ 117 Volts AC (275 watts, 2.5 Amp. While Tuning)			
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)			

SERVICING IN THE FIELD

SAFETY GLASS

The safety glass is an integral part of the picture tube.

FUSE

TV: A 5 Amp. (Line) fuse, a 7/10 Amp. (LV Supply) fuse, and a fuse wire (Fil.) are used for receiver protection. (For fuse location, see "Tube Placement Chart"; for fuse wire location, see M3 in photo, page 7.)

Remote Control Receiver: A 3/4 Amp. fuse is used for receiver protection. (See photo "Remote Control Receiver - Top View" for location.)

TUNER OSCILLATOR ADJUSTMENT

The Oscillator slug is adjusted by turning Fine Tuning.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by means of a Focus Control. (See "Tube Placement Chart" for location.)

SYNC STABILITY

Sync stability may be varied by means of a Fringe Lock. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by adjusting a metallic sleeve, located between the yoke and the picture tube neck, in or out of the yoke.

BUZZ ADJUSTMENT

To eliminate intercarrier buzz, adjust the Buzz Control for MINIMUM buzz and maximum sound. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

PINCUSHION CORRECTION

Reduce the picture size so that the sides of the raster are visible. Position the magnets so that all sides are straight.

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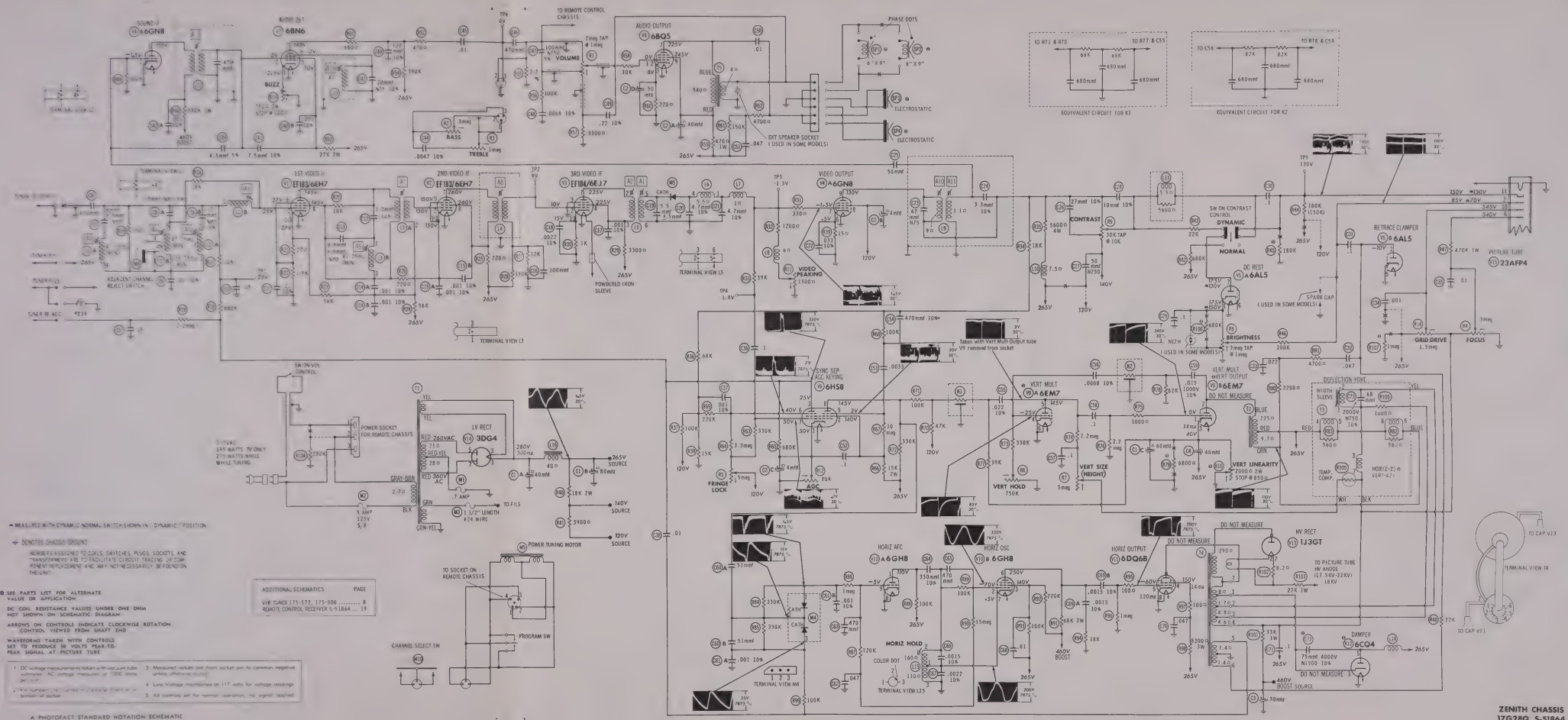
KA973

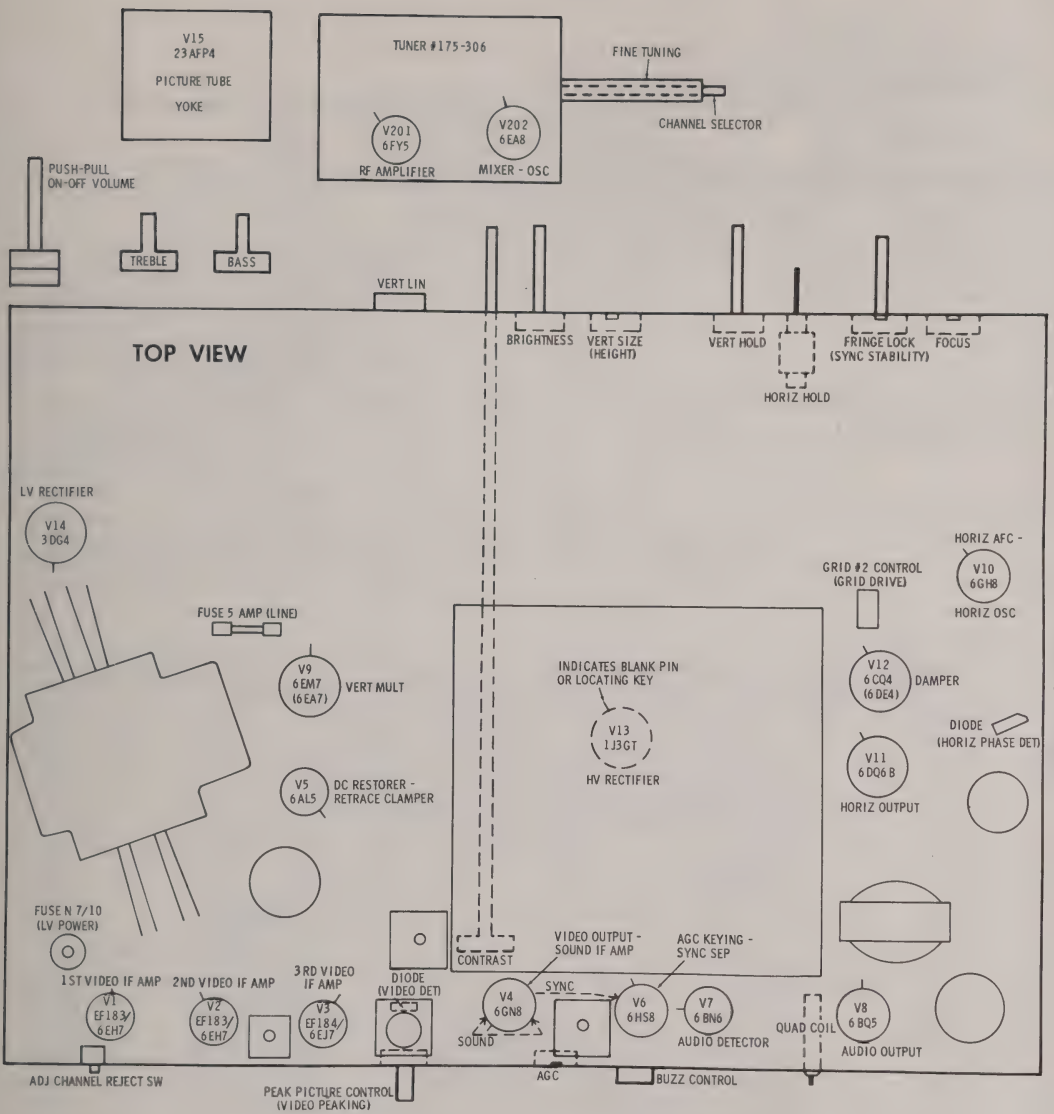
ZENITH CHASSIS
17G28Q, S-51864

ZENITH CHASSIS
17G28Q, S-51864

SET 549 FOLDER 2


ZENITH CHASSIS
17G28Q, S-51864
A PHOTOFACT STANDARD NOTATION SCHEMATIC
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 175-172, 175-306 8
REMOTE CONTROL RECEIVER S-51864 ... 19
DC VOLTAGE MEASUREMENTS TAKEN WITH VACUUM TUBE VOLTMETER
AC VOLTAGE MEASURED AT 1000 OHMS PER VOLT
LINE VOLTAGE MAINTAINED AT 117 VOLTS FOR VOLTAGE READINGS
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION
CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
DENOTES CHASSIS GROUND
MEAS. RED WITH DYNAM. NORMAL SWITCH SHOWN IN DYNAMIC POSITION
TERMINAL VIEW L3
TERMINAL VIEW L5
TERMINAL VIEW L15
TERMINAL VIEW M4
EQUIVALENT CIRCUIT FOR K1
EQUIVALENT CIRCUIT FOR K2
EXT SPEAKER SOCKET (USED IN SOME MODELS)
SPARK GAP (USED IN SOME MODELS)
POWER SOCKET FOR REMOTE CHASSIS
POWER TUNING MOTOR
TO SOCKET ON REMOTE CHASSIS
CHANNEL SELECT SW
PROGRAM SW
TO REMOTE CONTROL CHASSIS
TO CAP V13
TO CAP V11
TERMINAL VIEW 14
DO NOT MEASURE
460V BOOST SOURCE
TO PICTURE TUBE HV ANODE (17.5KV-22KV) 18 KV
SOUND I.F. V1 6BN6
AUDIO OUTPUT V3 6BQ5
1ST VIDEO I.F. V1 EF183/6EH7
2ND VIDEO I.F. V2 EF183/6EH7
3RD VIDEO I.F. V3 EF184/6EJ7
VIDEO OUTPUT V4 6GN8
SYNC SEP AGC KEYING V6 6HS8
VERT MULT V9 6EM7
VERT OUTPUT V9 6EM7
HORIZ AFC V10 6GH8
HORIZ OSC V10 6GH8
HORIZ OUTPUT V11 6DQ6B
HV RECT V13 1J3GT
RETRACE CLAMPER V5 6AL5
DC REST V5 6AL5
DAMPER V12 6CQ4
PICTURE TUBE V15 23AFP4
LV RECT V14 3DG4
SOUND V1 6GN8
VOLUME
BASS
TREBLE
BUZZ
CONTRAST
DYNAMIC
NORMAL
BRIGHTNESS
FOCUS
GRID DRIVE
VERT SIZE (HEIGHT)
VERT HOLD 750K
VERT LINEARITY
FRINGE LOCK
AGC
VIDEO PEAKING
HORIZ HOLD
COLOR DOT
TEMP. COMP.
WIDTH SLEEVE
DEFLECTION YOKE
HORIZ-SIG
VERT-SIG
TUNER
AGC
AFC
SYNC
VIDEO
SOUND
VERT
HORIZ
HV
BLK
GRN
BLUE
RED
YEL
GRAY-BRN
GRN-YEL
BLK-WHT

TV TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (Line), Fuse (LV Power), V14, Fuse Wire (Fil.)

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V9
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V9
Horiz. off freq. Diode (Horiz. Phase Det.), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V7, V8
Overloaded picture V6

SYNC FAILURE
No vert. sync V6
No horiz. sync V6
No vert. or horiz. sync V6

TV ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection. The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	High side thru 470mmf to TP-2. Low side to chassis.	44MC (10MC Swp.)	45.75MC	Between any two channels	Vert. Amp. thru 10K to TP-3. Low side to chassis.	A1, A2	Set sweep generator output to produce 3 volts peak to peak on scope. Adjust A1 and A2 alternately for maximum gain and symmetry with the 45.75MC marker positioned as shown in Fig. 1. If the desired response cannot be obtained, check to see that the cores are entering their respective windings from opposite ends of the coils.
2.	High side to ungrounded tube shield over Mixer-Osc. Low side to chassis	"	39.75MC 41.25MC 47.25MC	"	"	A3, A4, A5, A6	Connect a clip lead from TP-4 to chassis. Connect a clip lead from TP-1 to chassis. Use high scope gain and adjust A3 thru A6 for MINIMUM marker amplitudes as in Fig. 2. A3 controls 39.75MC marker, A4 and A5 control 41.25MC marker and A6 controls 47.25MC marker.
3.	"	"	41.25MC 42.75MC 45.0MC 45.75MC	"	"	A7, A8, A9 and Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 3 with markers as shown. A7 affects low frequency side of curve and A8 affects high side. Remove the clip leads.

SOUND IF ALIGNMENT

Connect an adjustable attenuator between the antenna and the receiver antenna terminals. Tune in a TV signal and adjust the attenuator until the signal is below the limiting level of the Audio Detector as evidenced by a hiss in the sound similar to super-regeneration in the sound. Adjust A10, A11, A12 and A13 for maximum sound and best quality. Adjust the Buzz control for MINIMUM buzz.
If the hiss disappears during the alignment, further reduce the signal strength until the hiss returns.

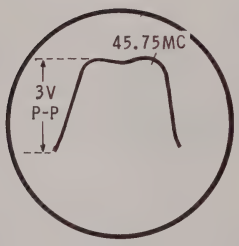


FIG.1

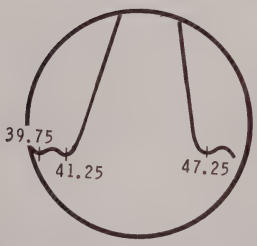


FIG. 2

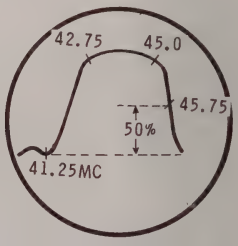
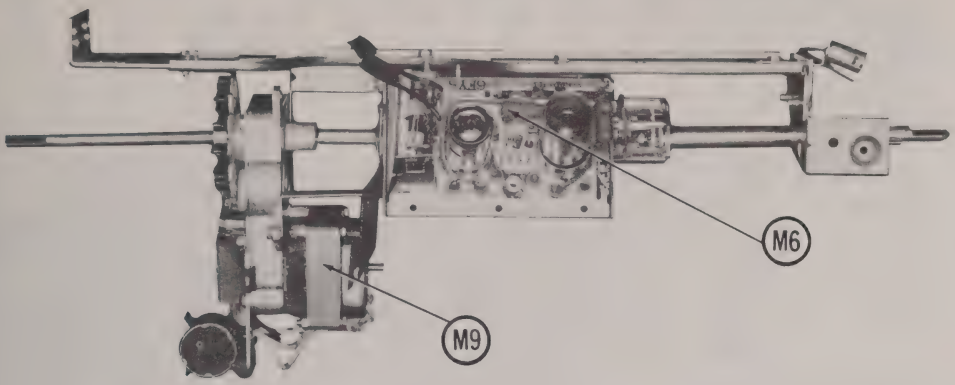
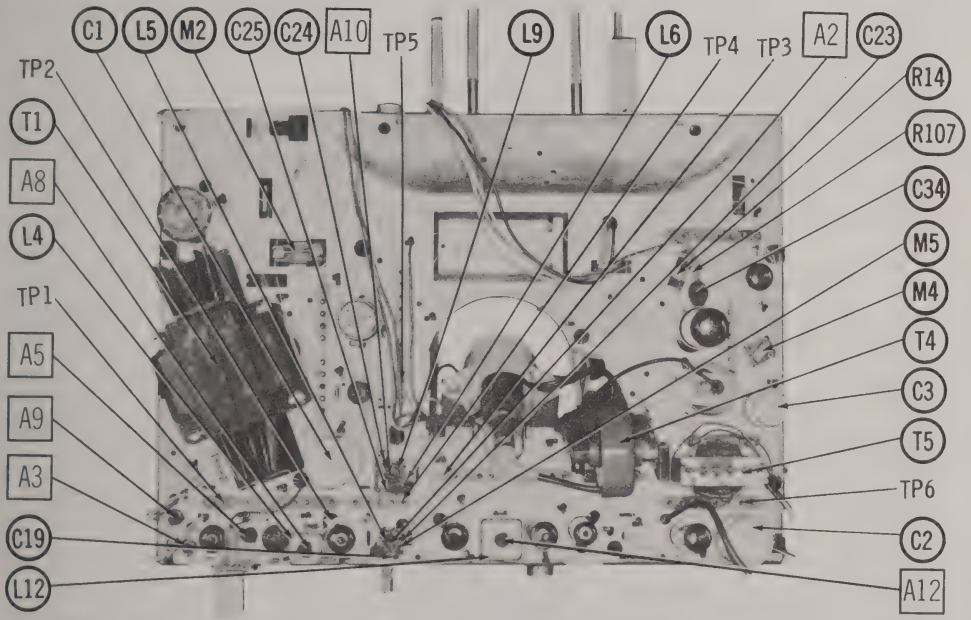


FIG. 3



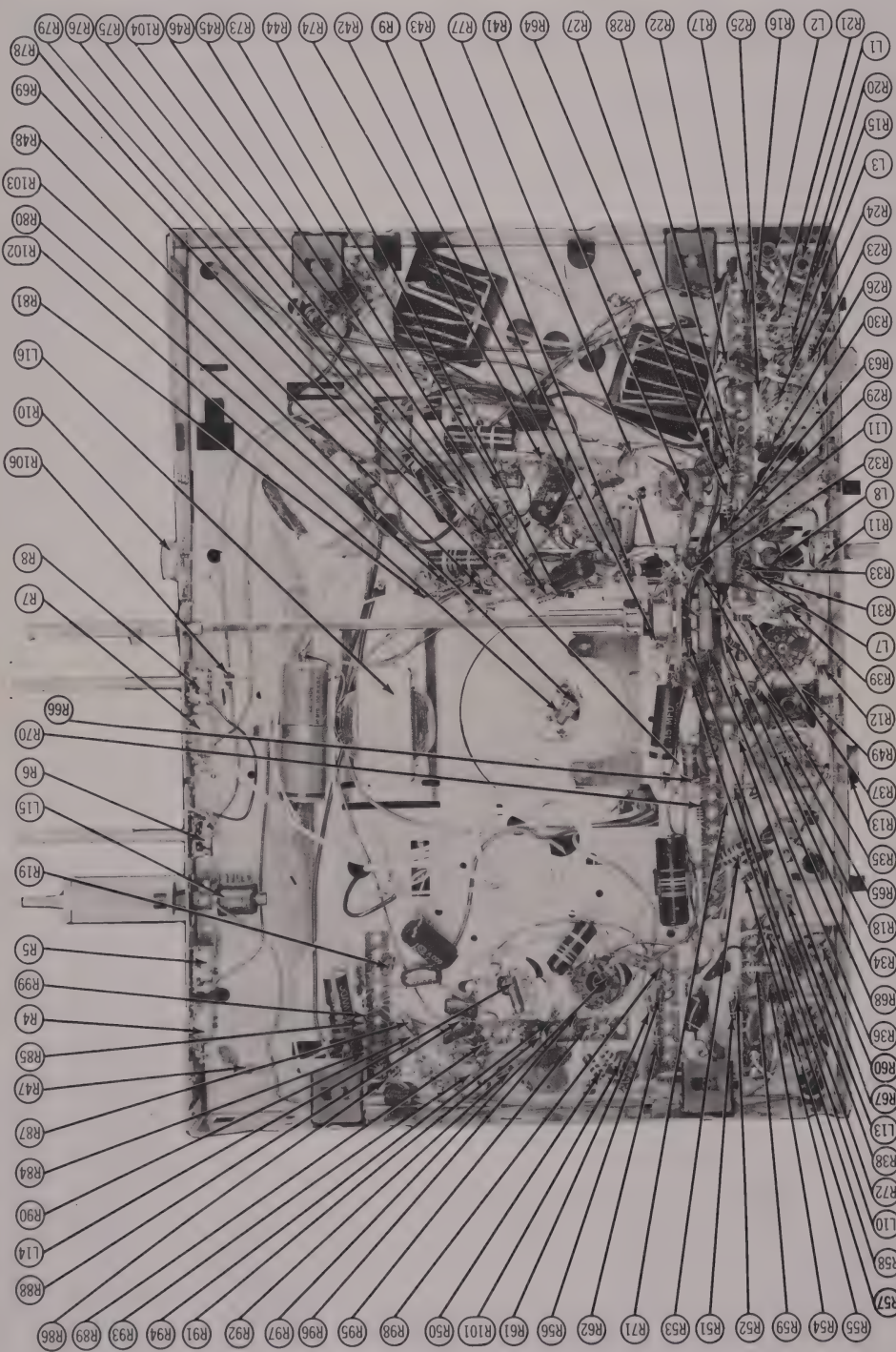
VHF TUNER - POWER TUNING ASSEMBLY

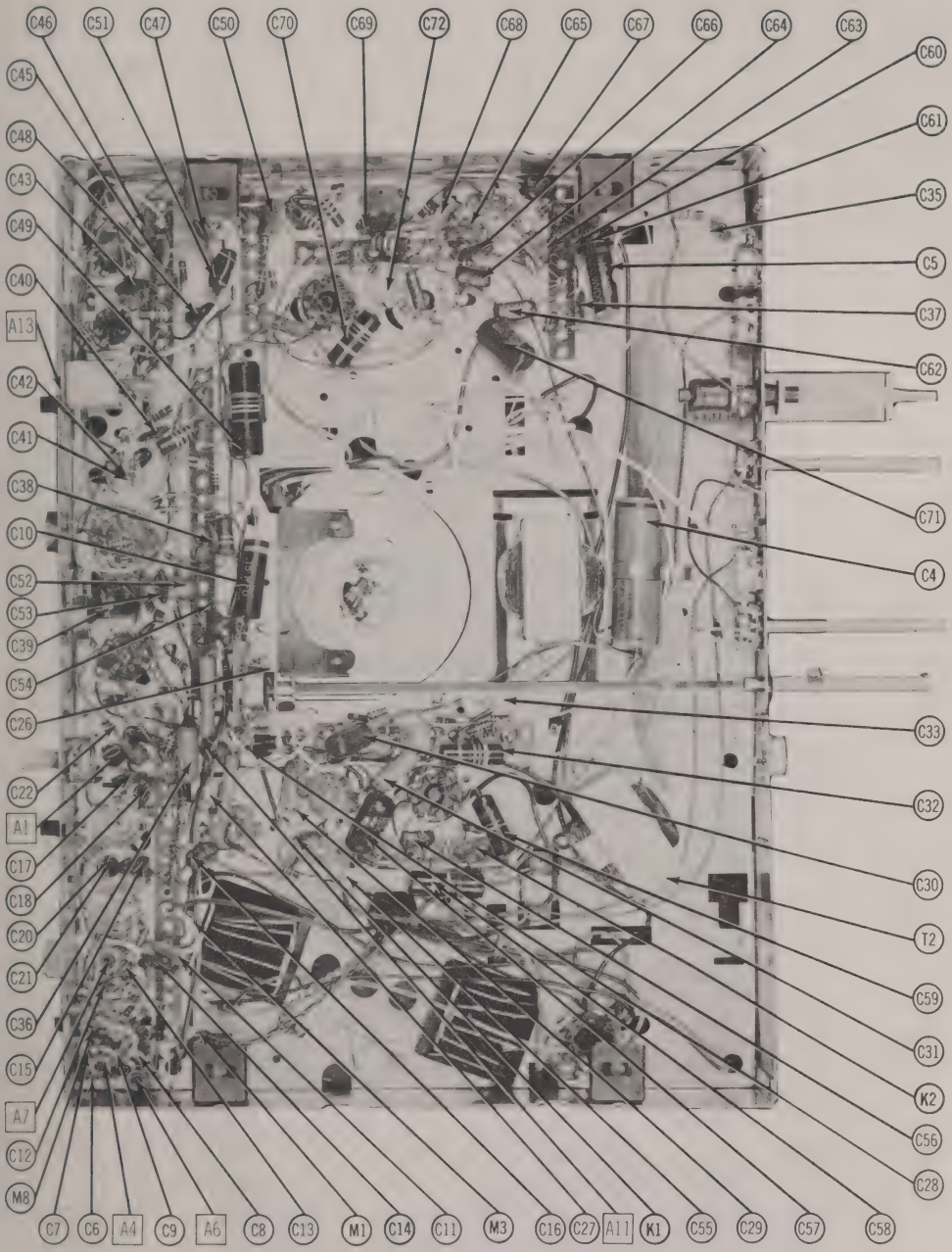


TP1	25V	IF AGC			
TP2	9V	3RD IF GRID	TP5	150V	PICTURE TUBE CATH
TP3	-1.3V	VIDEO OUTPUT GRID		*130V	*(SWITCH IN DYNAMIC POS.)
TP4	-1.4V	NOISE INVERTER	TP6	0V	TONE CONTROL INPUT

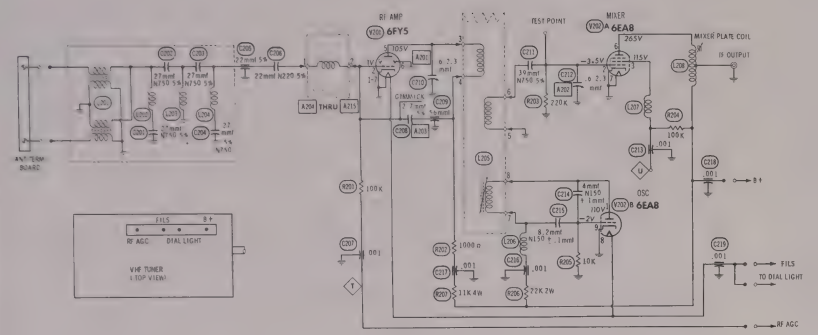
TV CHASSIS - TOP VIEW

TV CHASSIS BOTTOM VIEW - RESISTOR, INDUCTOR IDENT.





TV CHASSIS BOTTOM VIEW
ALIGN., CAPACITOR, MISC., TRANSFORMER IDENT.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER 175-172, 175-306

VHF TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202 ..... GENERAL CEMENT #9051
WALSCO #2527

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 2.5 volt bias supply to point ⓘ. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 100K to point ⓘ. Low side to chassis.	A201, A202,	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201.
2.	"	"	"	"	Vert. Amp. thru 10K across Video Detector load.	A203	Increase bias to minus 20 volts. Without changing the bias, adjust A203 to obtain MINIMUM response on the scope. A203 is adjusted by moving lead of C208.
3.	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
		207MC	205.25MC 209.75MC	12		A205	
		201MC	199.25MC 203.75MC	11		A206	
		195MC	193.25MC 197.75MC	10		A207	
		189MC	187.25MC 191.75MC	9		A208	
		183MC	181.25MC 185.75MC	8		A209	
		177MC	175.25MC 179.75MC	7		A210	
		85MC	83.25MC 87.75MC	6		A211	
		79MC	77.25MC 81.75MC	5		A212	
		69MC	67.25MC 71.75MC	4		A213	
		63MC	61.25MC 65.75MC	3		A214	
		57MC	55.25MC 59.75MC	2		A215	

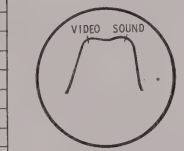
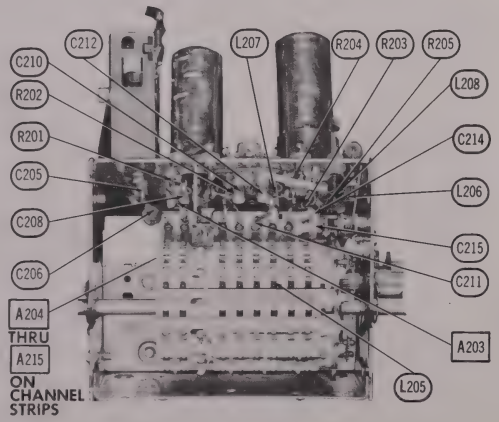
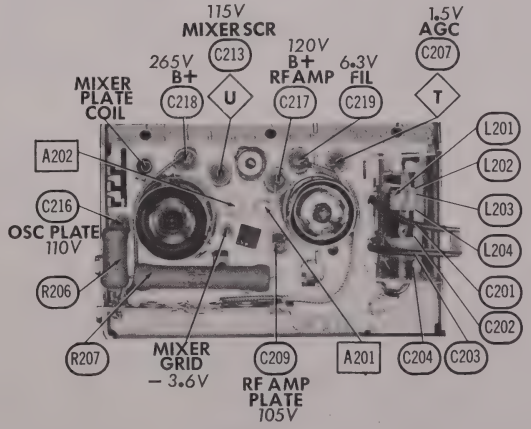


FIG. 201



VHF TUNER 175-306 - LEFT SIDE



VHF TUNER 175-306 - TOP VIEW

ZENITH CHASSIS
17G28Q, S-51864

FOLDER 2

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amplifier	EF183/6EH7	V7	Audio Detector	6BN6
V2	2nd Video IF Amplifier	EF183/6EH7	V8	Audio Output	6BQ5
V3	3rd Video IF Amplifier	EF184/6EJ7	V9	Vert. Mult.	6EM7 (6EA7) *
V4	Video Output - Sound IF Amp.	6GN8	V10	Horiz. AFC - Horiz. Osc.	6GH8
V5	DC Restorer - Retrace Clamper	6AL5	V11	Horiz. Output	6DQ6B
V6	AGC Keying - Sync Sep.	6HS8	V12	Damper	6CQ4 (6DE4) *
			V13	HV Rectifier	1J3GT
			V14	LV Rectifier	3DG4

* Alternate

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ZENITH PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V15	23AFP4		23AFP4 ①		23AFP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ZENITH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	■40	400	22-2743	AFH4-58-75	C1104	FP368.5	TMT-3661	TVL-3756	
B	▬80	400							
C	▲60	50							
C2A	▲40	450	22-3462	AFH4-113-40	D0842	FP464.9	TMQ-4643	TVL-4772	
B	▬4	350							
C	■4	150							
D	50	25							
C3	30	475	22-3463	PRS1840	BR3050	TC84	TD-30-500	TVAS-1908 *	
C4	40	350	22-3464	PRS1670	BR4035	TC78	TD-40-350	TVA-1611	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	.15	200V			P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C6	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C7	6	NPO	±.5mmf	#22-2381			C10V6C			
C8A	17	NPO	5%			TCZ-18	C10Q18C	CM-19B-180J	CNO-418	10TCC-Q18
B	17	NPO	5%			TCZ-18	C10Q18C	CM-19B-180J	CNO-418	10TCC-Q18
C9	.01		10%		DI-10000			CCD-103		10TS-S10
C10	.15	200V			P288N-15		CUB2P15	2DP-3-154	GEM-2015	2TM-P15
C11	.01		10%		DI-10000			CCD-103		10TS-S10
C12	1.2		10%		NPO-SI 1.5	TCZ-1R5	C10V15C		CNO-515	10TCC-V12
C13	8.5	NPO	±.5mmf		NPO-DI 8.2		C10V9C			10TCC-V82
C14A	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C15A	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C16	100				DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C17	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C18	.0022		10%		DI-2200		PM6D22	CCD-222	GP222	10TS-D22
C19	5.5		±.5mmf		NPO-DI 5.0		C10V6C	CCTO-050		10TCC-V56
C20	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C21	4.7		10%		NPO-SI 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C22	.033	200V	10%		V84C2S33-10%		PM4S33	4DP-2-333	GEM-1613	4PS-S33
C23	47	N75		#22-2467				*		
C24	3.3		10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C25	50				SI-50	D6-500	L10Q5	CCD-500	GP450	10TS-Q50
C26	27		10%		NPO-SI 27	D6-27	L10Q27	CCD-270	GP427	10TS-Q27
C27	50	N750			N750-DI 47	TCN-50	C10Q5U	CCTN-470	CN7-447	10TCU-Q47
C28	10		10%		NPO-SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C29	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C30	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C31	.1	200V			P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C32	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	.022	400V			P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C34	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C35	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C37	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C38	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	4.3		5%	#22-3315						
C40A	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001		10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C41	7.5		10%	#22-2742						
C42	20	N75	10%	#22-3139				*		
C43	100		10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C44	.0047		10%		DI-4700		PM6D47	CCD-472	JL-247	10TS-D47
C45	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C46	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C47	100	N750	5%			DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C48	.0068	200V	10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C49	.22	200V	10%		V84C2P22-10%		PM2P22	2DP-4-224	GEM-2072	2TM-P22
C50	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C51	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C52	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C53	.0033				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C54	470		10%		DI-470	DD-471	5R5T47	CCD-471	GP347	10TS-T47
C55	.022	400V	10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-16122	4TM-S22
C56	.0068	200V	10%		V84C2D68-10%		PM6D68	6DP-1-682	GEM-16268	6TM-D68
C57	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C58	.1	600V			P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C59	.015	1000V	10%				DPMS16S15	16DP-4-153		10TM-S15

FIXED CAPACITORS (cont)

ITEM No	RATING			REMARKS	REPLACEMENT DATA						
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.	
C80A	.01				DI-50	DS-500	CD-500	CCD-500	GP450	10TS-Q50	
B	.01				DI-50	DS-500	CD-500	CCD-500	GP450	10TS-Q50	
C81A	.001		10%		DI-1000	DD-102	CD-102	CCD-102	GP210	10TS-D10	
B	.001		10%		DI-1000	DD-102	SR5DL	CCD-102	GP210	10TS-D10	
C82	.047	200V			P388N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47	
C83	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C84	330		10%		1459-00033		SR5T33	CM-19D-331K	MC9241	MS-333	
C85	470				DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47	
C86	.0015		10%		1464-0015		1R5D15	CM-19B-152K	MCB454	MS-BT	
C87	.0022		10%		1464-0022		1R5D22	CM-19B-222K	MC1459	MS-ET	
C88	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HA-B20	
C89A	.0015		10%		DI-1500	DD-152	5R5D15	CCD-152	GP215	10TS-D15	
B	.0015		10%		DI-1500	DD-152	5R5D15	CCD-152	GP215	10TS-D15	
C70	.047	600V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47	
C71	.047	600V			P488N-1	DE-504	CUB6P1	6DP-4-104	GEM-604	6TM-P10	
C72	75	4000V	N1500 10%	Note 1							
C73	68	3000V	N750								

Note 1. Some versions may use 45mmf in this application (Part #22-2858).
Zenith Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		ZENITH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS—IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
	RESISTANCE	WATTS						
R1A	2meg	½	63-4659	APL-82		S1S-139X ⑤	PP3S716	Volume
	Long Tap							
B	Shaft			AK-33		Not Req.	DS-37	
C	Switch			Not Req.		SK3 ⑦	Not Req.	Push-Pull Off-On
R2A	3meg	½	63-4592	AB-855		B1T-140		Bass
B	Shaft			AK-33		SK3		
R3A	1meg	½	63-4499	AB-70	A47-1meg-Z	B1S-137	US3	Treble
B	Shaft			AK-33	R3-3/16	SK3	DS-37	
R4	3meg	½	63-4455	TT-464	B47-3meg-S	S1J-C3	EU-68	Focus
R5A	5meg	½	63-4612	TT-87	B47-5meg-Z	B1S-141	PTA5SL	Fringe Lock (Sync Stability)
B	Shaft		Not Req.	Not Req.	Not Req.	KT6M	Not Req.	
R6A	75K	½	63-4486	B-66	A47-75K-S	S1J-136	U56	Vert. Hold
B	Shaft		Not Req.	KB6-3	Not Req.	Not Req.	Not Req.	
R7	5meg	½	63-4660	TT-87	B47-5meg-S	S1J-C5	PTA5SL	Vert. Size (Height)
R8	3meg	½	63-4786			Q13-140X	UT-45T	Brightness
	Long Tap							
R9A	50K	½	63-4787					Contrast
	10K Tap							
B	Switch							Normal-Dynamic
R10	2000Ω	2(WW)	63-4784 ①	WW-152	39-1500	113-1500	FL-1K	Vert. Linearity
	550Ω Stop			**	**	**	**	
R11A	150Ω	½	63-4606	TT-511	B47-150-S	S1J-109	PTA15SL	Video Peaking
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R12A	10K	½	63-4095	TT-14	B47-10-S-B	S1J-116	PTA4SL	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R13	750Ω	3(WW)	63-3384	WW-751	39-800	113-800	FL-T50	Buzz
	100Ω Stop			†	†	†	†	
R14A	1.5meg	½	63-4799	TT-742	B47-1.5meg-S	S1J-138	PTA5SL	Grid Drive
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

① Some versions may use 1500Ω, (Part #63-4630).
② Factory Assembled Part #PPQ18-139X (8X8).
** Use 820Ω, 2W Resistor in series with terminal.
† Use 100Ω, 2W Resistor in series with terminal.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R15	150Ω			
R16	18K			
R17	10K			
R18	680K			
R19	2.2meg			
R20	47K			
R21	220Ω			
R22	330Ω			
R23	56K			
R24	56K			
R25	220Ω			
R26	220Ω			
R27	13K			
R28	1.8K			
R29	100KΩ			
R30	68Ω			
R31	330Ω			
R32	1.8K			
R33	33K			
R34	18K			
R35	5600Ω	4W	PW5-5600	4G-5800
R36	68K			
R37	100K			
R38	47K			
R39	47Ω			
R40	18K	2W		
R41	39000Ω			
R42	5.6K			
R43	47Ω			
R44	180K			(150Ω) *
R45	180K			(Note 1)
R46	100K			
R47	470K	1W		
R48	22K			
R49	18K			
R50	330K	1W		
R51	680Ω			
R52	47Ω			
R53	.47K	2W		PW3-8200
R54	220K			
R55	2.2meg			
R56	100K			
R57	10K			
R58	470Ω	1W		
R59	220Ω			
R60	220Ω			
R61	150K			
R62	4700Ω			
R63	330K			
R64	3.3meg			
R65	680K			
R66	18K	2W		
R67	10meg			
R68	100K			
R69	220K			
R70	47K			
R71	100K			
R72	330K			
R73	330K			
R74	2.2meg			
R75	1000Ω			
R76	2.2meg			
R77	39K			
R78	82K			
R79	6800Ω			
R80	82000Ω			
R81	4700Ω			
R82	560Ω			
R83	560Ω			
R84	330K			
R85	330K			
R86	1meg			
R87	120K			
R88	100K			
R89	100K			
R90	15meg			
R91	68K	2W		
R92	220K			
R93	100K			
R94	18K			
R95	100Ω			
R96	1meg			
R97	100Ω			
R98	8200Ω	3W	PW3-8200	3G-8200
R99	100K			
R100	Temp. Comp.			#63-4726
R101	33K	1W		
R102	5.6Ω			
R103	22K	1W		
R104	220K			

TV PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No	WORKMAN TV PART No.	
R105	1000Ω			
R106	680K			(Note 1)
R107	1meg			(Note 1)

* Alternate Value
Note 1. May not be used in some versions.
Zenith Part Number

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	ZENITH PART No	REPLACEMENT DATA
K1	Vert. Integrator		87-8	
K2	Vert. Feedback		87-7	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	41.25MC Trap	S-51749 ①	TV-132	622	RTC-8552	T234	① Part #6-51750 (Complete Assembly)
B	1st Video IF						② Part #6-47987 (Complete Assembly)
L2A	39.75MC Trap	S-51746	TV-152	6226	RTC-8526	T220	
B	47.25MC Trap		TV-153	6225	RTC-8525	T230	
L3A	2nd Video IF	S-51753		622	RTC-8552	T234	③ Part #6-48892 (Complete Assembly)
B	41.25MC Trap						④ Wound on 5600Ω Resistor.
L4	3rd Video IF	S-51755	TV-130	6234	RTC-8555	T217	
L5	4th Video IF	S-47968 ②					⑤ Part #6-43717 (Complete Assembly)
L6	Peaking (80uh)	S-44879	TV-181	6177	RTC-8594	T304	* Parallel with 5600Ω Resistor.
L7	RF Choke (8uh)	S-2088	BC-565	4810	RTC-8520	T859	
L8	Peaking (170uh)	S-43819	TV-184	6180	RTC-8597	T310	
L9A	4.5MC Trap	S-50341 ③	TV-120	1482 1FT	RTC-9056	T253	
B	1st Sound IF						
L10	Peaking (250uh)	S-16011	TV-185	6181	RTC-8598	T315	
L11	Peaking (100uh)	S-51748 ④	TV-194 *	6112 *	RTC-8574 *	T305 *	
L12	2nd Sound IF	S-41999 ⑤	TV-143				
L13	Quadrature	S-47702	TV-121	1480	RTC-8605	T251	
L14	RF Choke (10uh)	S-21777	BC-566	4812	RTC-8522	T990	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L15	Horiz. Osc. (Horiz. Hold)	S-47150						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC. RES.	INDUCTANCE @ CURRENT 1000 ℄	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L16	.300A	40Ω	1 Hy.	95-1838	C-2996	C-2343	26C44	C-34X	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI	SEC. 1	SEC. 2	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V ⑥ 1.75A	530 VCT 250A DC	5V ⑦ 3.8A	95-1834				R-92A	
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⑦ 8.5A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	Vert. Output	95-1823	A-2831	A-8149	26S22 ①	A-31X	
T3	Yoke (Horiz. 13MH) (90°) (Vert. 43MH) Rear Cover and Centering Device	95-1825		DY-39A ②	Y-39 ③	Y-40 & NW3 ④	
		S-43091					
T4	Horiz. Output	S-49918	HVO-187			D-201	

① Connect as autoformer.
② Add fifth lead and connect same as original.
③ Connect same as original.
④ Connect yoke terminal #3 to horiz. output transformer #2, yoke #1 to horiz. output terminal #4. Connect thermistor (R100) from terminal #1 to vertical height control. Connect 1K ½ watt resistor from yoke #2 & #7 to horiz. output terminal #3.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	4000Ω	3-4Ω	95-1703	A-2935	A-3877 ①	26B49 ①	S-5X	① Drill new mounting hole(s).

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	ZENITH PART No.	QUAM PART No.	
SP1	6" x 9" PM		8-8Ω	40-831 ①	69A126.8	①Used in Models G3360W, Y; G3368M, R; G3385H
SP2	6" x 9" PM		8-8Ω	40-831 ①	69A126.8	②Used in Model G3375L
SP3	Electrostatic			S-23829 ①②		
SP4	Electrostatic			S-23839 ①②		
				40-830 ②		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	7/10A 250V	136-38		333.700 (N 7/10A 250V)	340010	N 7/10	HN 1/2 to 3/4
M2	3AG	5A 125V S/B	136-42		312004 (3AG 5A 125V S/B)	357001	MDX5	4406
M3	1 1/2"	length	of #24 wire					

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA			NOTES
		ZENITH PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	
M4		103-32 ‡	6CG1 †	1N87 †	‡ Horiz. AFC, Dual Selenium, Common Cathode Type
M5		103-23 †			† Crystal Diode, Video Detector

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M6	Tuner	175-306	VHF, Complete
M7	Tuner	175-172	VHF, Complete. May be used in some versions of Model G3360W.
M8	Spark Gap	S-42787	May not be used in some versions.
M9	Switch	85-368	Adjacent Channel Reject (UPST Slide Type)
M10	Motor Drive Assy.		Includes Motor Switch Assembly #6-6498
M11	Switch	S-44018	Channel Selector (on TV Escutcheon)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO. G3360W	G3360Y	G3368M	G3368R	G3375L	G3385H
Knob-Channel Selector	46-2551 and S-47420	X	X	X	X	X	X
Knob-Fine Tuning	S-51867	X	X	X	X	X	X
Knob-Volume, Bass, Treble	S-45716	X	X	X	X	X	X
Knob-Horizontal Hold	46-2509	X	X	X	X	X	X
Knob-Vertical Hold, Brightness	S-50939	X	X	X	X	X	X
Knob-Contrast	S-52214	X	X	X	X	X	X

CABINET PART NO.	MODEL NO. G3360W	G3360Y	G3368M	G3368R	G3375L	G3385H
14-3574	X					
14-3575		X				
14-3479			X			
14-3478				X		
14-3480					X	
14-3492						X

ZENITH CHASSIS 17G28Q, S-51864

WIRING DATA

High Voltage Lead	Use BELDEN No. 8400
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8974
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8276
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8486 (Round) - 8 Conductor

REMOTE CONTROL RECEIVER PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	GENERAL ELECTRIC * RAYTHEON * SYLVANIA *	
	USE	TYPE
V18	1st RF Amplifier	6AU8
V17	2nd RF Amplifier	6AU6
V18	Limiter - Tripler	6AU6
V19	CW - CCW Channel Selector Discriminator	6AL5

ITEM No.	USE	TYPE
V20	Vol. Step - CW Channel Sel. Relay Control Amp.	6CM7
V21	Vol. Step - Mute Discr.	6AL5
V22	CCW Channel Sel. - Mute Relay Control Amp.	6CM7
V23	Rectifier	5Y3GT

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA					
	CAP.	VOLT	ZENITH PART No.	AEROVOX PART No.	CORNELL DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C74	10	350	22-2043	PRE620	BRU045	TC83	TD-10-450	TVA-1604	
C75	5	50	22-2041	PRE510	BRE5-50	TC90	TD-5-50	TVA-1303	
C76	4	300NP	22-2893	PRS7750		TC81 †		TVANS-1602 *	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FOLDER 2

REMOTE CONTROL RECEIVER PARTS LIST (Continued)

FIXED CAPACITORS

ITEM No.	RATING		REMARKS	REPLACEMENT DATA					
				AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C77	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C78	100			DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C79	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C80	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C81	680	10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C82	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C83	9	NPO 10%		NPO-DI 10	DTZ-10	C10V9C	CCTO-100	CNO-410	10TCC-Q10
C84	680	10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C85	100	10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C86	680	10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C87A	.001	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C88	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C89	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C90	680	10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C91	100	10%		1469-0001	TCZ-100	22R5T1	CM-19B-101K	MCB235	MS-31
C92	680	10%		1469-00068		5R5T68	CM-19B-681K	MCJ249	MS-368
C93A	.001	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
B	.001	10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C94	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C95	.047	200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C96	.0047			BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C97	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C98	.01			BPD-01	DD-103	BYA10D1	CCD-103	B-110	5HK-S10

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA	
		IRC PART No.	WORKMAN TV PART No.
R108	1.5meg		
R109	150K		
R110	470K		
R111	1.2meg		
R112	68K		
R113	100K		
R114	1meg		
R115	47K		
R116	100Ω		

ITEM No.	RATING	REPLACEMENT DATA	
		IRC PART No.	WORKMAN TV PART No.
R117	2.2meg		
R118	2.2meg		
R119	2.2meg		
R120	2.2meg		
R121	1meg		
R122	2.2meg		
R123	2.2meg		
R124	2.2meg		
R125	2.2meg		

ITEM No.	RATING	REPLACEMENT DATA	
		IRC PART No.	WORKMAN TV PART No.
R126	1meg		
R127	1meg		
R128	330K		
R129	100Ω 10W	PW10-100	10W-SQ-100
R130	10K		
R131	3300Ω		
R132	22K		
R133	1meg		
R134	47K		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		ZENITH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L17	39.5KC IF	S-43725					
L18	Discriminator (Pri)	S-24788					
L19	Discriminator (Sec)	S-24789					
L20	Discriminator (Pri)	S-24788					
L21	Discriminator (Sec)	S-24789					

TRANSFORMER (POWER)

ITEM No.	RATING		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	ZENITH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T6	117V @ .35A	210V @ .020A DC (Tap @ 30V @ .001A DC). Tap @ 6.3V & 2.5A	95-1612					
	SEC. 2							
	5V @ 2A							

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA			NOTES
	CURRENT (Measured)	ZENITH PART No.	RCA PART No.	SARKES TARZIAN PART No.	
M11	.001A	212-21 *		Model 12 *	* Selenium Type

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			ZENITH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M12	3AG	3/4A 250V S/B	136-41		313.750 (3AG 3/4A 250V S/B)	357001	MDL 3/4	4405

MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M13	Switch	85-580	Auto-Manual (DPDT Slide Type)
M14	Relay	195-5 or 195-7	CCW
M15	Relay	S-43723	Step, Includes Switch #S-43854 & S-43926
M16	Relay	195-5 or 195-7	CW
M17	Relay	S-24705	Sound (Bi-Stable)

TUNER PARTS LIST AND DESCRIPTIONS

175—306

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FY5	V202	Mixer - Osc.	6EA8

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C202	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C203	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C204	27 N750 5%			TCN-27	C10Q27U		CN7-427	10TCU-Q27
C205	22 5%	#22-3270						10TCR-Q22
C206	22 N220 5%	#22-3371				*		
C207	.001		EF-001	MFT-1000		CCF-102	CT280A	
C208	2.7 5%	#22-3405						10TCC-V27
C209	56	#22-3488						
C210	.6-2.3			829-3		CV-1	CT565	
C211	39 N750 5%			TCN-39	C10Q39U		CN7-439	10TCU-Q39
C212	.6-2.3			829-3		CV-1	CT565	
C213	.001		EF-001	MFT-1000		CCF-102	CT280A	
C214	4 N150 ±.1mmf	#22-3372				*		
C215	8.2 N150 ±.1mmf	#22-3369				*		10TCP-V82
C216	.001		EF-001	MFT-1000		CCF-102	CT280A	
C217	.001		EF-001	MFT-1000		CCF-102	CT280A	
C218	.001		EF-001	MFT-1000		CCF-102	CT280A	
C219	.001		EF-001	MFT-1000		CCF-102	CT280A	

Zenith Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

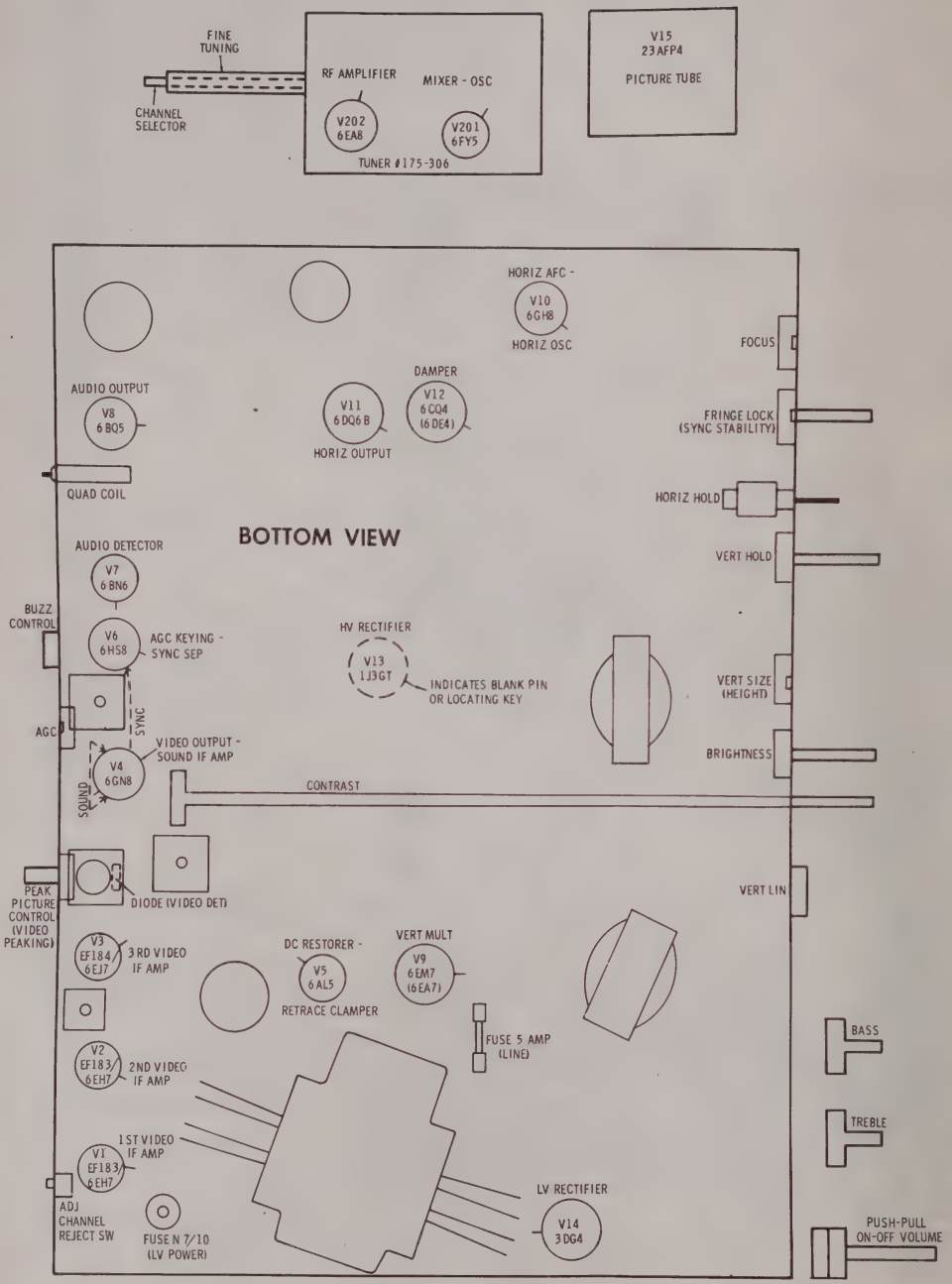
ITEM No.	RATING	REPLACEMENT DATA		REMARKS	ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.				IRC PART No.	WORKMAN TV PART No.	
R201	100K				R205	10K			
R202	1000Ω				R206	22K 2W			
R203	220K				R207	11K 4W	PW4-11K	4G-11K	
R204	100K								

COILS (RF-IF)

ITEM No.	USE	ZENITH PART No.	NOTES
L201	Ant.	S-49189	
L202	RF Choke	20-874	
L203	RF Choke	20-799	
L204	RF Choke	20-798	
L205A	Ant., RF, Mixer & Osc.	S-49202	Channel 2
B	"	S-49203	Channel 3
C	"	S-49204	Channel 4
D	"	S-49205	Channel 5
E	"	S-49206	Channel 6
F	"	S-49207	Channel 7

ITEM No.	USE	ZENITH PART No.	NOTES
L205G	Ant., RF, Mixer & Osc.	S-49208	Channel 8
H	"	S-49209	Channel 9
J	"	S-49210	Channel 10
K	"	S-49211	Channel 11
L	"	S-49212	Channel 12
M	"	S-49213	Channel 13
L206	RF Choke	S-49738	
L207	RF Choke	20-797	
L208	Mixer Plate	S-50720	

TV TUBE PLACEMENT CHART



RESISTANCE MEASUREMENTS

TV

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF183/6EH7	NC	1.4meg	1500Ω	FIL	FIL	0Ω	▪220Ω	▪220Ω	1500Ω
V2	EF183/6EH7	INF	32K	NC	FIL	FIL	0Ω	†260Ω	†260Ω	INF
V3	EF184/6EJ7	1000Ω	12K	NC	FIL	FIL	0Ω	†3300Ω	†3300Ω	0Ω
V4	6GN8	0Ω	100K	†360K	FIL	FIL	15Ω	●2100Ω	21K	†5000Ω
V5	6AL5	1.5meg	22K	FIL	FIL	0Ω	NC	†680K ●▪†27K		
V6	6HS8	●7000Ω	†15K	687K	FIL	FIL	†210K	●†600K	†100K	†10meg
V7	6BN6	●380Ω	.3Ω	FIL	FIL	†27K	4Ω	†390K		
V8	6BQ5	NC	●15K	220Ω	FIL	FIL	NC	†1000Ω	NC	†510Ω
V9	6EM7	2.2meg	†265Ω	●1200Ω	●700K	†●5meg	0Ω	FIL	FIL	
V10	6GH8	†100K	100K	†200K	FIL	FIL	†100K	110Ω	0Ω	1.6meg
V11	6DQ6B	TP	FIL	NC	†8300Ω	1meg	NC	FIL	0Ω	TOP CAP †8Ω
V12	6CQ4	TP	NC	¶400K	NC	†40Ω	NC	FIL	FIL	
V13	1J3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †298Ω
V14	3DG4	¶30K	NC	¶30K	TP	25Ω	NC	28Ω	TP	
V15	23AFP4	FIL	●700K	Pin 6 ●†2.5meg	Pin 10 ●†280K	Pin 11 †110K ●▪†5000Ω	Pin 12 FIL			
V201	6FY5	0Ω	2.9meg	FIL	FIL	†12K	0Ω	0Ω		
V202	6EA8	†22K	220K	†100K	FIL	FIL	†40Ω	0Ω	0Ω	10K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

ALL MEASUREMENTS MADE WITH DYNAMIC CONTRAST "OFF" UNLESS OTHERWISE DESIGNATED

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

▪ MEASURED WITH DYNAMIC CONTRAST "ON".

▪ MEASURED FROM PIN 1 OF V2.

NC NO CONNECTION

† MEASURED FROM PIN 3 OF V14.

† MEASURED FROM PIN 3 OF V12.

TP TIE POINT

REMOTE CONTROL RECEIVER

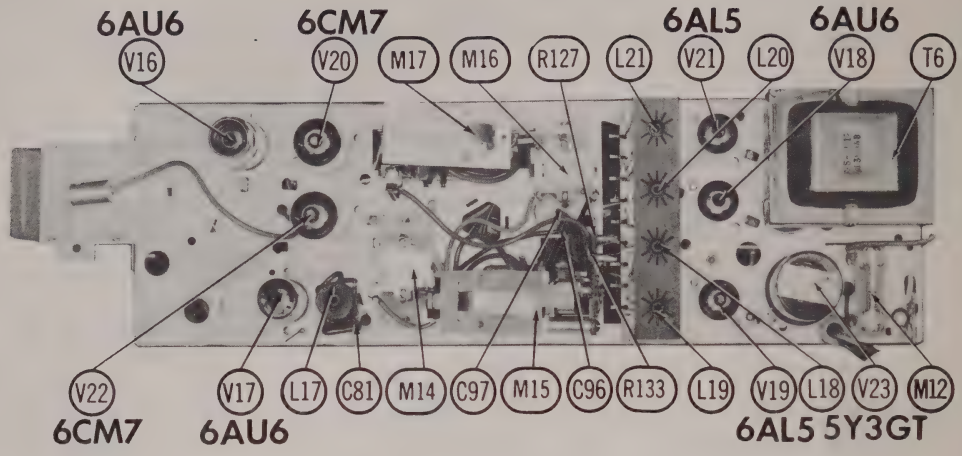
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V16	6AU6	1.5meg	0Ω	FIL	FIL	††160K	††480K	0Ω		
V17	6AU6	2.3meg	0Ω	FIL	FIL	††72Ω	††68K	0Ω		
V18	6AU6	100K	100Ω	FIL	FIL	††30Ω	††47K	100Ω		
V19	6AL5	1.8meg	2.2meg	FIL	FIL	1.8meg	NC	2.2meg		
V20	6CM7	††4000Ω	NC	0Ω	FIL	FIL	††750Ω	2.8meg	2.8meg	0Ω
V21	6AL5	1.8meg	2.2meg	FIL	FIL	1.8meg	NC	2.2meg		
V22	6CM7	††3000Ω	TP	0Ω	FIL	FIL	††750Ω	2.8meg	2.8meg	0Ω
V23	5Y3GT	NC	¶	TP	245Ω	NC	245Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

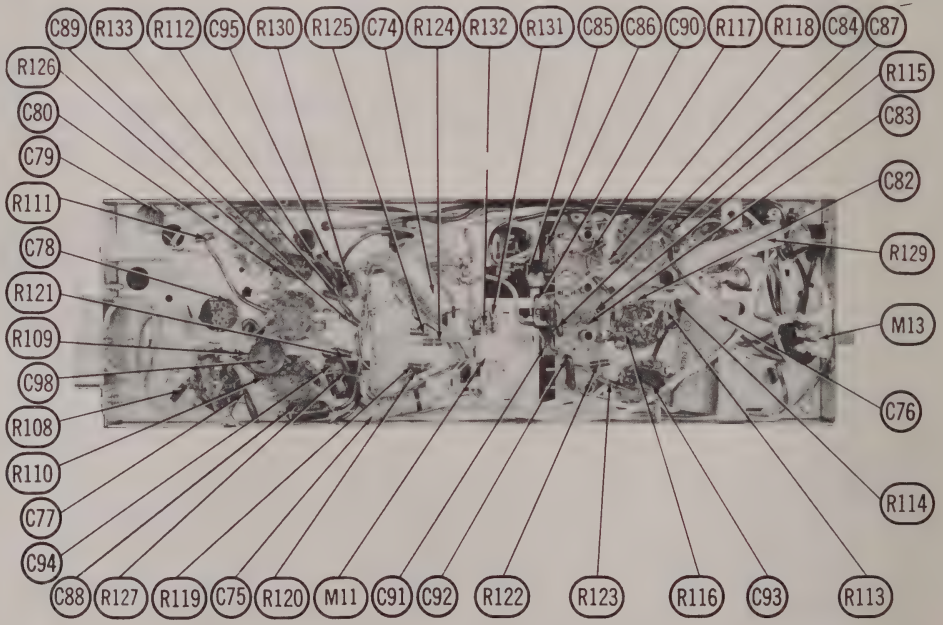
†† MEASURED FROM PIN 8 OF V23.

NC NO CONNECTION

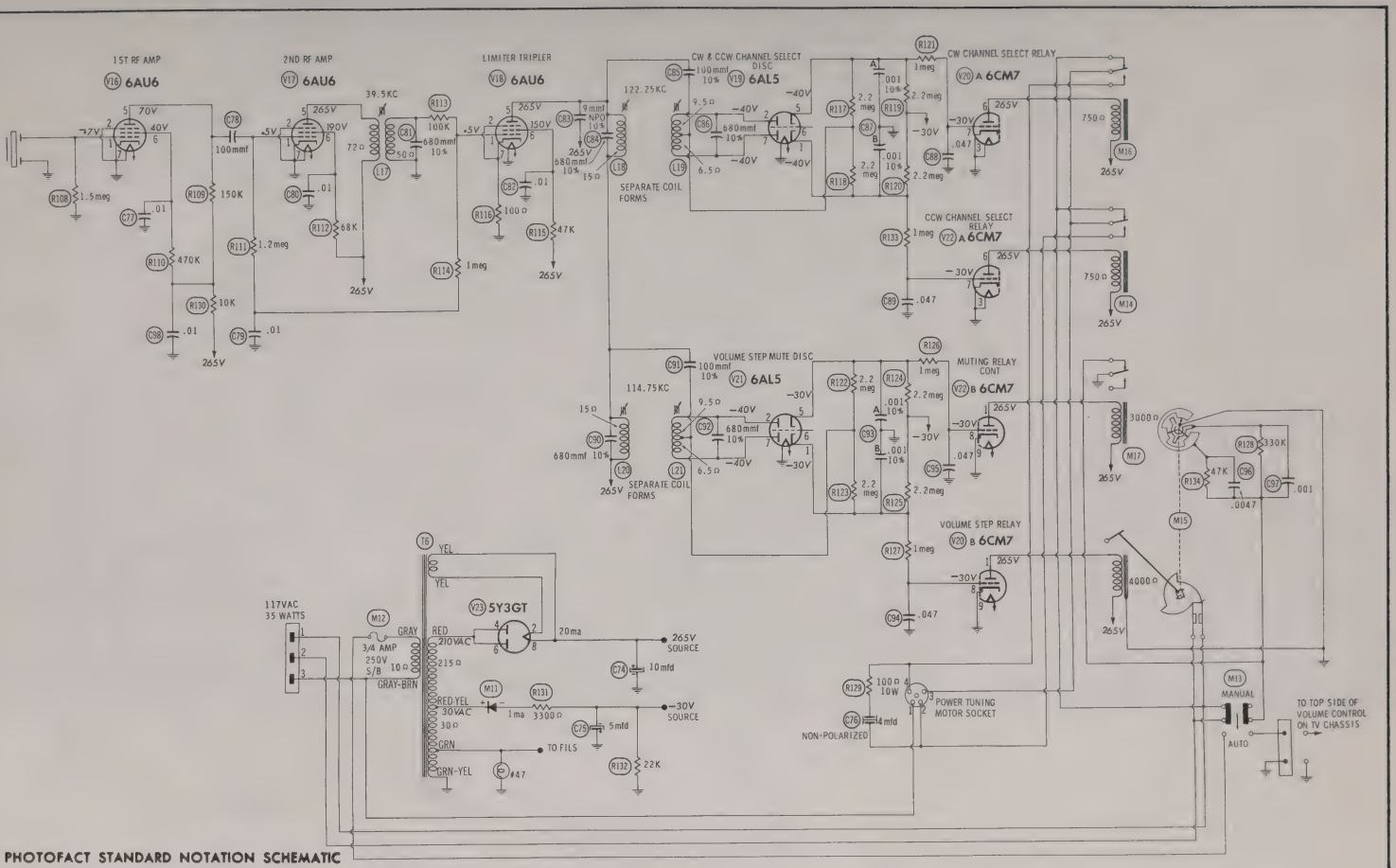
TP TIE POINT



REMOTE CONTROL RECEIVER S-51864 - TOP VIEW



REMOTE CONTROL RECEIVER S-51864 - BOTTOM VIEW



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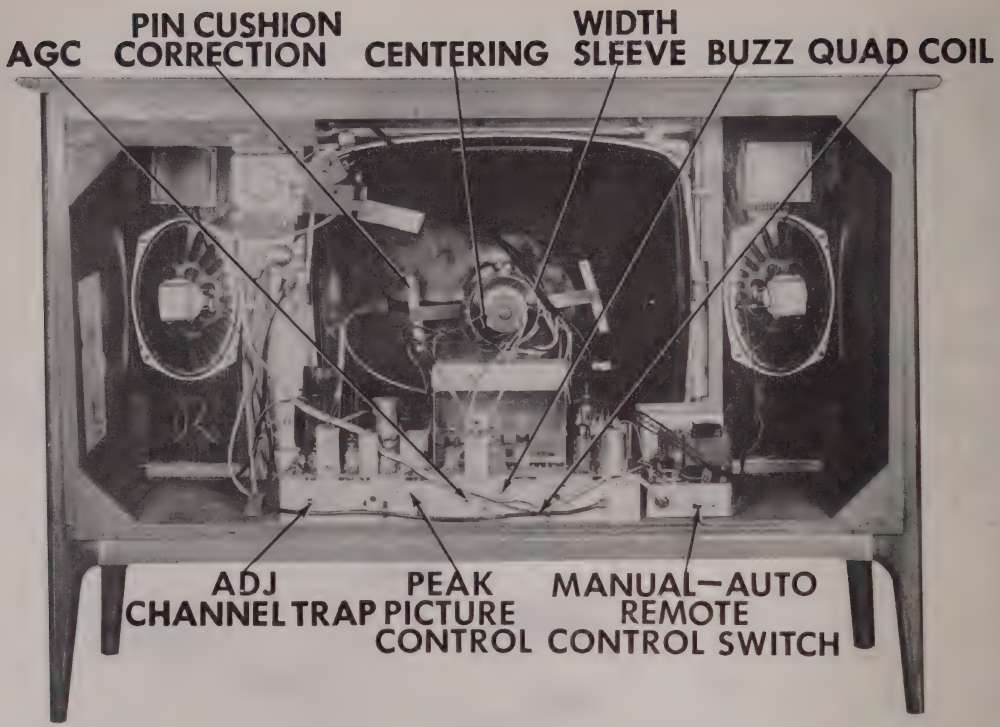
REMOTE CONTROL RECEIVER S-51864

ZENITH CHASSIS
17G28Q, S-51864



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

The Horizontal Hold is equipped with a stop which limits rotation to approximately 270° with the knob on the shaft. To adjust, remove the knob and adjust by turning the shaft until the picture is synchronized to the point where it is virtually impossible to disrupt horizontal synchronization when switching from channel to channel. Install the knob with its pointer centered between the stops.

DISASSEMBLY INSTRUCTIONS

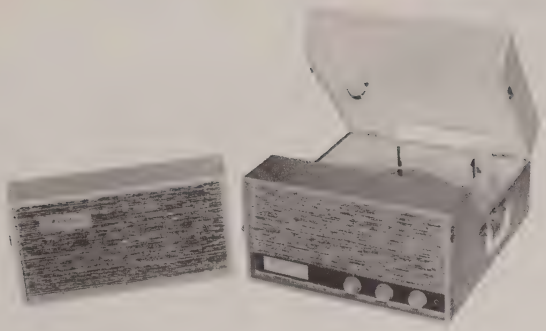
CHASSIS AND PICTURE TUBE ASSEMBLY REMOVAL

1. Remove Channel Select knob at rear.
2. Remove 9 wood screws holding rear cover.
3. Disconnect antenna leads.
4. Remove rear cover.
5. Disconnect muting wires.
6. Remove plug from remote control chassis.
7. Remove Channel Selector plug.
8. Disconnect speaker leads.
9. Disconnect all VHF Tuner leads.
10. Remove 4 chassis bolts.
11. Remove 6 screws holding front mask.
12. Remove speaker wires from under chassis.
13. Remove chassis and picture tube assembly out front.
14. To remove VHF Tuner assembly, remove 2 screws at rear of cabinet.

PHOTOFACT® Folder

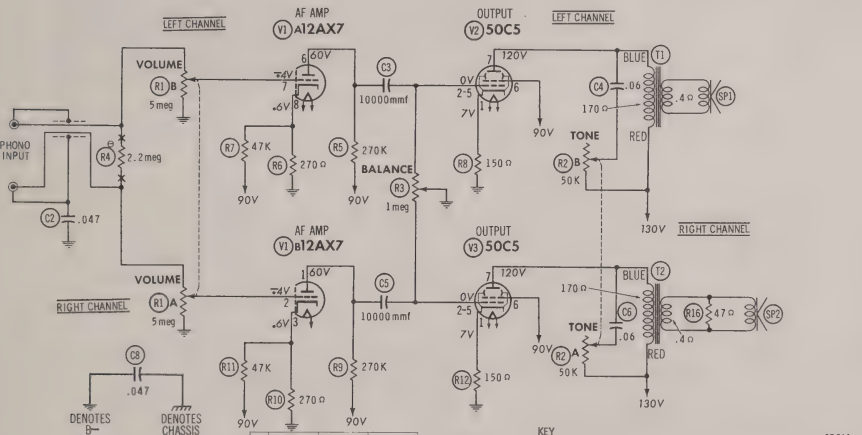
AIRLINE MODEL JWR-1039A

AIRLINE MODEL JWR-1039A



TRADE NAME	Airline Model JWR-1039A
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105 – 125 Volts AC, 60 Cycles RATING 32 Watts, .34 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12



No.	12AX7	50C5	50C5
1	†275K	150Ω	150Ω
2	0Ω	500K	500K
3	270Ω	15Ω	75Ω
4	0Ω	75Ω	150Ω
5	15Ω	NC	500K
6	†275K	†4700Ω	†4700Ω
7	0Ω	†170Ω	†170Ω
8	270Ω		
9	NC		

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KT698

SET 549 FOLDER 3

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Left Channel AF Amp. - Right Channel AF Amp.	12AX7
V2	Left Channel Output	50C5
V3	Right Channel Output	50C5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	150	150	14283	PRS3800	BBRD0163.7	WD235	TDLD-14	TVA-2462	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C3	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C4	.06 200V		P288N-06		CUB6S6	6DP-3-603	GEM-416	6TM-S60
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	.06 200V		P288N-06		CUB6S6	6DP-3-603	GEM-416	6TM-S60
C7	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	5meg		13229	B-88	AD47-5meg-S		FA56A	Volume, Right Channel
B	5meg			SR-88	Not Req.		RU56A	Volume, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R2A	50K		14642	B-32	AD47-50K-S		FB54A	Tone, Right Channel
B	50K			SR-32	Not Req.		RU54A	Tone, Left Channel
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg		13501	B-69	A47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

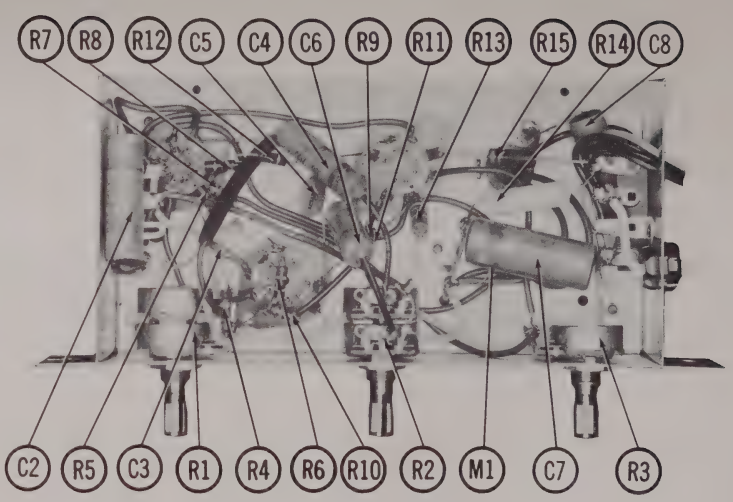
ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	2.2meg			Note 1
R5	270K			
R6	270Ω			
R7	47K			
R8	150Ω			
R9	270K			
R10	270Ω			
R11	47K			
R12	150Ω			
R13	4700Ω 1W			
R14	47Ω 3W	PW5-47	5W-SQ-47	
R15	33Ω 1W			
R16	47Ω			

Note 1. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	3400Ω	3-4Ω	13706	A-3025	A-3332	24S48	S-16X	
T2	3400Ω	3-4Ω	13706	A-3025	A-3332	24S48	S-16X	

CHASSIS—BOTTOM VIEW



SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA AIRLINE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	14450	52A1	
SP2	5 1/4"	PM	3-4Ω	14450	52A1	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA AIRLINE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.080A	13782	1N1763	2F4	SR200	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	AIRLINE PART No. CARTRIDGE	AIRLINE PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	60-60	Not Req.	13T	Not Req.	13	Not Req.	10TB-2S	N-8TA-S *	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder

AIRLINE MODELS WG-2694A, B, WG-2695A, B, WG-2696A, B, WG-2698A, B

AIRLINE MODELS WG-2694A, B, WG-2695A, B, WG-2696A, B, WG-2698A, B

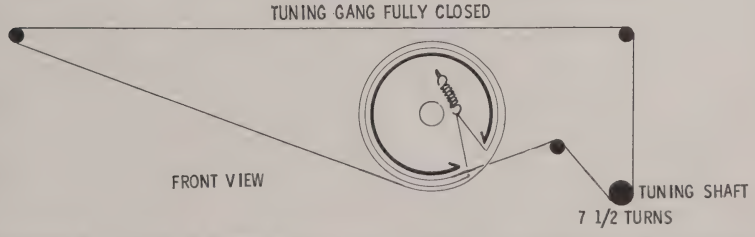
MODEL WG-2696A

AIRLINE MODELS WG-2694A, B, WG-2695A, B, WG-2696A, B, WG-2698A, B

TRADE NAME	Airline Models WG-2694A, WG-2694B, WG-2695A, WG-2695B, WG-2696A, WG-2696B, WG-2698A, WG-2698B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago 7, Illinois
TYPE SET	AC Operated 12 Tube FM-AM Receiver With 4 Speed Automatic Stereo Record Changer
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles RATING 100 Watts, .9 Amp. @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535—1620KC FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18
OR RECORD CHANGER MANUAL RC-12

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

EIA MEMBER

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JN685R

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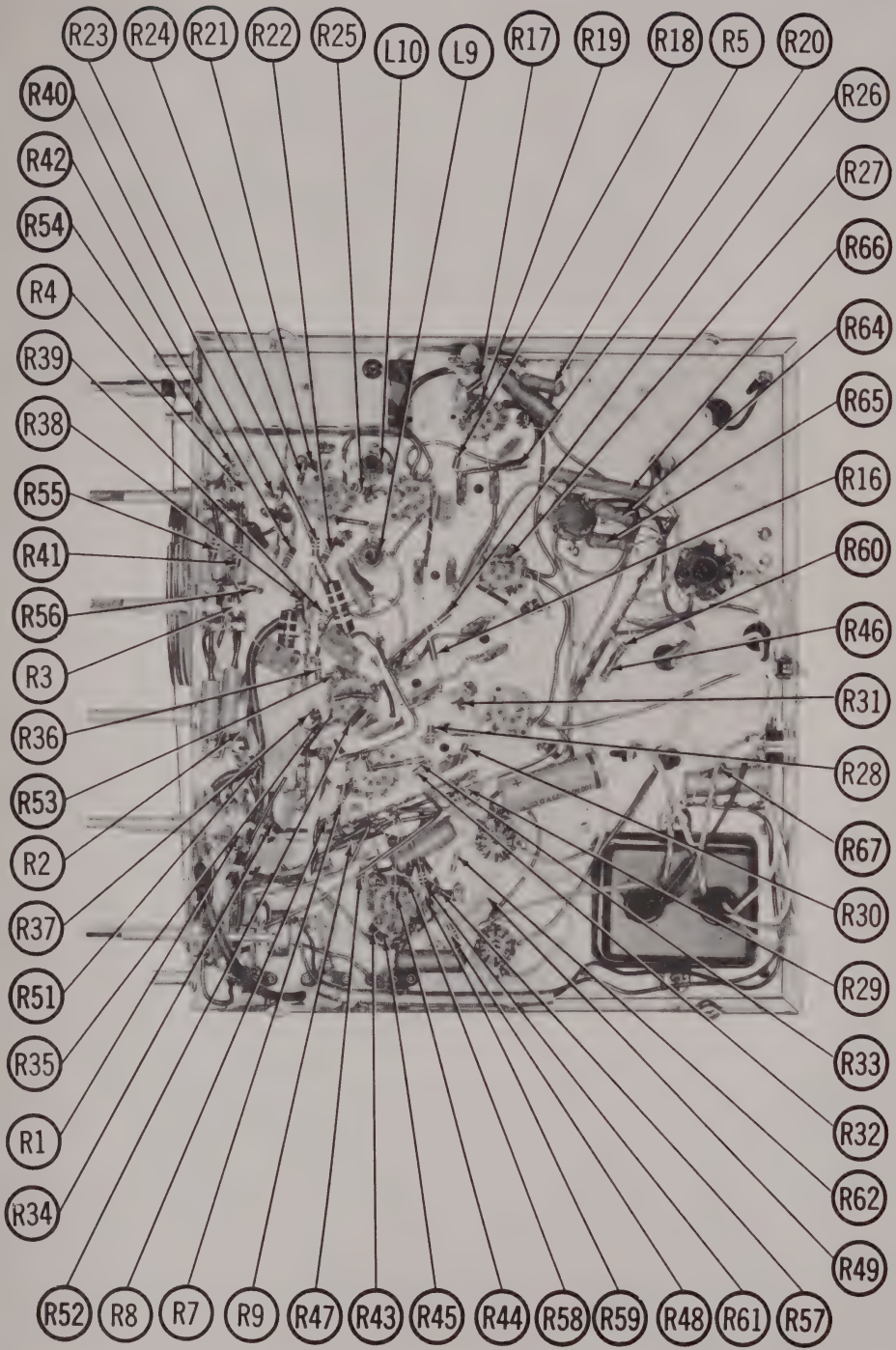
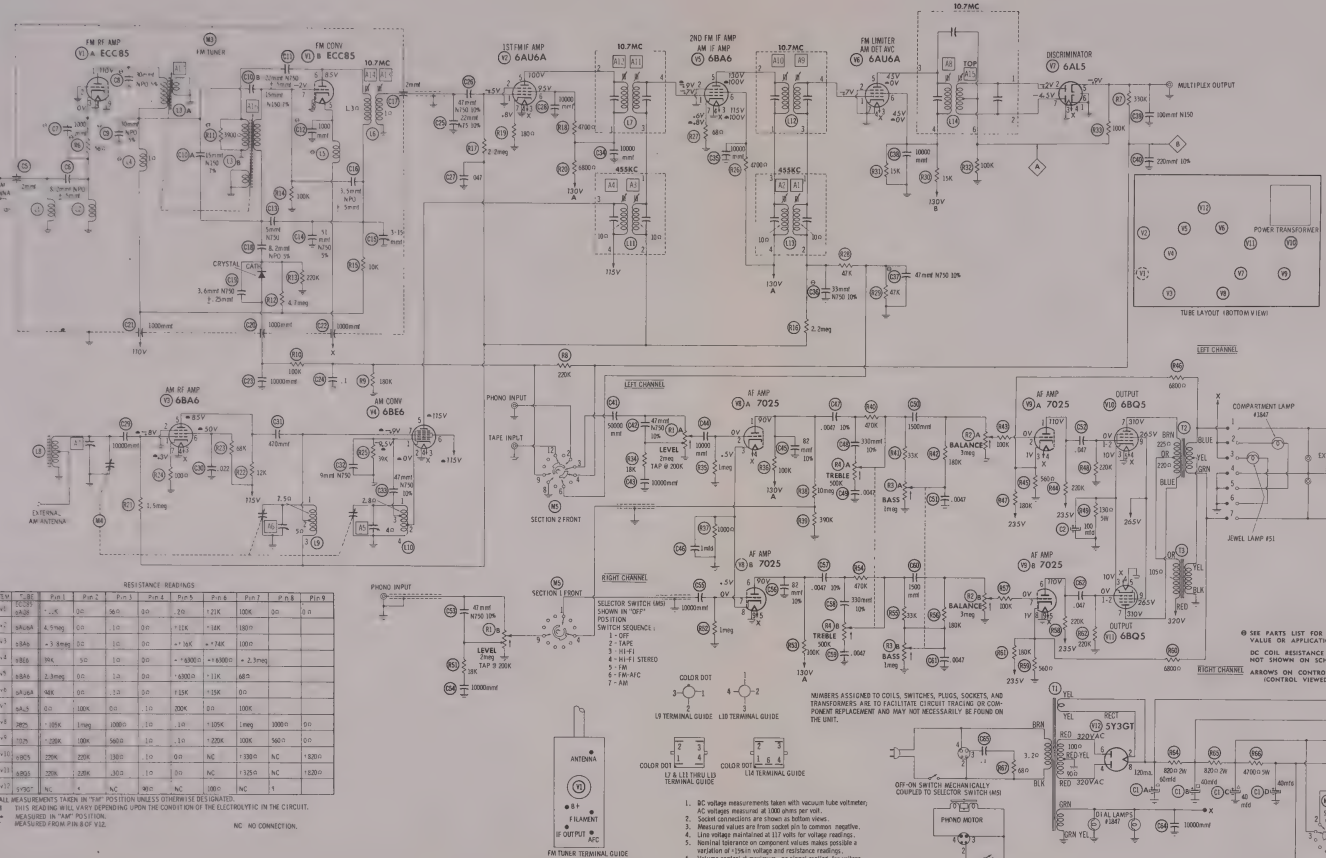


CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



RESISTANCE READINGS

TUBE	T-BC SOCKET	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AQ8	∞20K	0Ω	560Ω	2Ω	2Ω	↑21K	100K	0Ω	0Ω
V2	6BA6A	4.5meg	0Ω	1Ω	0Ω	↑11K	↑16K	180Ω		
V3	6BA6	∞3.8meg	0Ω	1Ω	0Ω	∞↑16K	∞↑74K	100Ω		
V4	6BE6	1MK	5Ω	1Ω	0Ω	∞↑6300Ω	∞↑6300Ω	∞2.3meg		
V5	6BA6	2.3meg	0Ω	1Ω	0Ω	↑6300Ω	↑11K	68Ω		
V6	6AU6A	48K	0Ω	1Ω	0Ω	↑15K	↑15K	0Ω		
V7	6AL5	0Ω	100K	0Ω	1Ω	200K	0Ω	100K		
V8	7025	∞105K	1meg	1000Ω	1Ω	1Ω	↑105K	1meg	1000Ω	0Ω
V9	7025	∞220K	100K	560Ω	1Ω	1Ω	↑220K	100K	560Ω	0Ω
V10	6BQ5	250K	220K	130Ω	1Ω	0Ω	NC	↑330Ω	NC	↑820Ω
V11	6BQ5	220K	220K	130Ω	1Ω	0Ω	NC	↑325Ω	NC	↑220Ω
V12	5Y3GT	NC	∞	NC	90Ω	NC	100Ω	NC	∞	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
↑ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
∞ MEASURED IN "AM" POSITION.
↑ MEASURED FROM PIN 8 OF V12.
NC NO CONNECTION.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom view.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±5% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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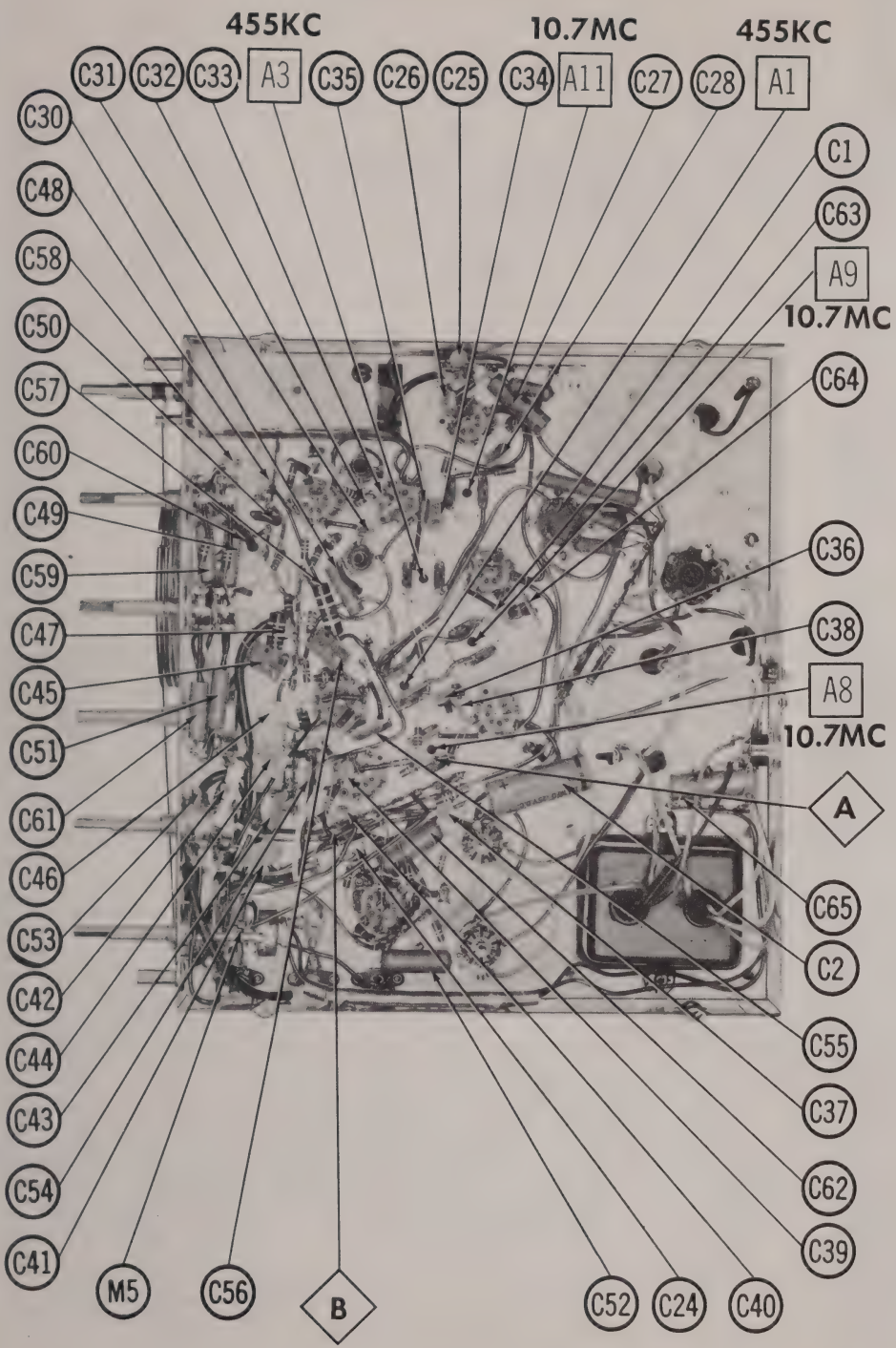
AIRLINE MODELS WG-2694A, B, WG-2695A, B, WG-2696A, B, WG-2698A, B



CHASSIS BOTTOM VIEW-ALIGNMENT, CAPACITOR & MISC. IDENT

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication on VTVM.

Suggested Alignment Tools:

A1 thru A4.....	GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532
A5, A6, A7.....	GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520
A8 thru A12, A15.....	GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440 WALSCO #2526, 2543, 2544, 2545
A13, A14.....	GENERAL CEMENT #9296, 9297 WALSCO #2546, 2547

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400∿ Mod.)	(AM) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	"	1620KC	"	"	A5	"
3.	Loop	1400KC	Tune to 1400KC Signal	"	A6, A7	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (Unmod.)	(FM) High end stop.	DC probe thru 1meg to point (A). Common to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum deflection.
5.	"	"	"	DC probe to point (B). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITON

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	High side thru .001mfd to pin 7 (grid) of FM Converter. Low side to chassis.	10.7MC (450KC Swp)	(FM) High end stop.	Vert. amp. thru 27K to point (A). Low side to chassis.	A8, A9, A10, A11, A12, A13, A14	Adjust for maximum gain and symmetry of response similar to Fig. 1.
5.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Across FM antenna terminals.	95MC (Unmod.)	(FM) 95MC	DC probe thru 1meg to point (A). Common to chassis.	A16, A17	Adjust for maximum deflection.

FIG. 1

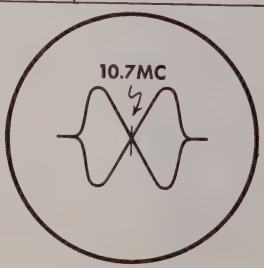


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp.-FM Conv.	ECC85/6AQ8	V8	Left Channel AF Amp-Right Channel AF Amp.	7025
V2	1st FM IF Amplifier	6AU6A	V9	Left Channel AF Amp-Right Channel AF Amp.	7025
V3	AM RF Amplifier	6BA6	V10	Left Channel Output	6BQ5 (EL84) *
V4	AM Converter	6BE6	V11	Right Channel Output	6BQ5 (EL84) *
V5	2nd FM IF Amp.-AM IF Amp.	6BA6	V12	Rectifier	5Y3GT
V6	FM Limiter-AM Det.-AVC	6AU6A			
V7	Discriminator	6AL5			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA AIRLINE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲60	400	45X450	AFH4-18-45	CO350	FP377	TMT40	TVL-3787	
B	■40	400			BR6045	TC795	TD-80-450	TVA-1714	
C	▲40	400							
D	40	400							
C2	100	25	45X449	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C3	5	10NP	45X426	NP-PRS7550	BBR10-25 †	TCN105		TVAS-1110 *	
C4	5	10NP	45X426	NP-PRS7550	BBR10-25 †	TCN105		TVAS-1110 *	

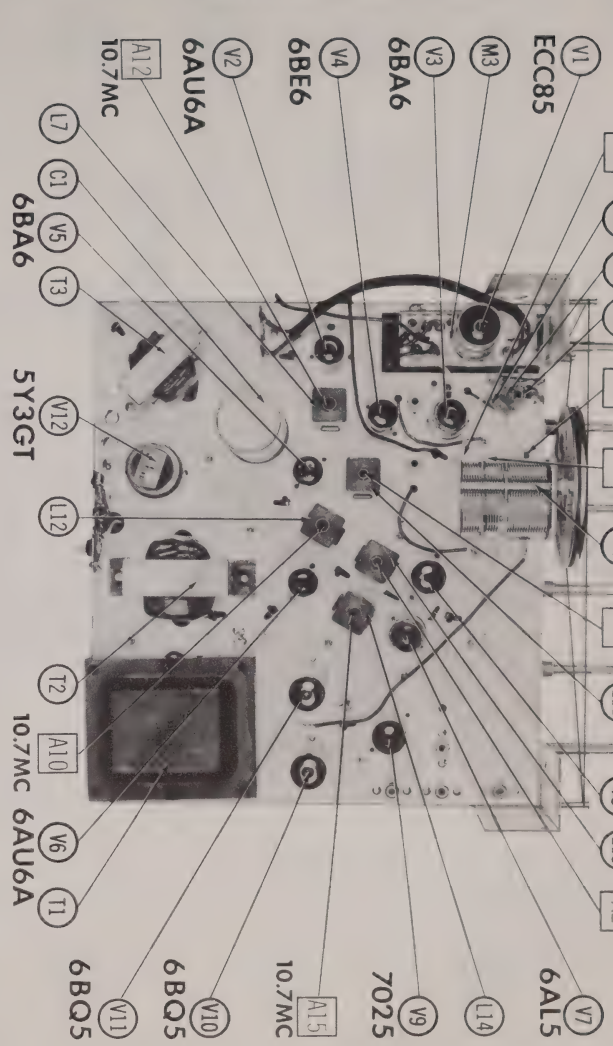
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	2	#13M-015						
C6	8.2 NPO ±.5mmf		NPO-DI 8.2		C10V82C			10TCC-V82
C7	1000	Note 2	BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C8	30 NPO 5%	Note 1		TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C9	30 NPO 5%	Note 1		TCZ-30	C10Q3C	CCTO-300	CNO-433	10TCC-Q30
C10A	15 N150 7%	#13L8PG150N2				*		10TCP-Q15
B	15 N150 7%					*		10TCP-Q15
C11	22 N750 ±.5mmf			DTN-22	C10Q22U		CN7-422	10TCU-Q22
C12	1000	Note 2	BPD-001	DD-102	BYA10D1	CCD-102	GP210	5HK-D10
C13	5 N750			DTN-5	C10V5U	CCTN-050	CN7-550	10TCU-V5
C14	51 N750 5%			TCN-51	C10Q51U			
C15	3-15	#19B-902-5						
C16	3.5 NPO ±.25mmf		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C17	2	#13M-015						
C18	8.2 NPO 5%		NPO-DI 8.2		C10V82C			10TCC-V82
C19	3.6 N750 ±.25mmf	#13L8UJ3R6						10TCU-V33
C20	1000		EF-001	MFT-1000		CCF-102	CT280A	
C21	1000		EF-001	MFT-1000		CCF-102	CT280A	
C22	1000		EF-001	MFT-1000		CCF-102	CT280A	
C23	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C24	.1 100V		P288N-1	DF-104	CUB2P1	DP-2-104	GEM-201	2TM-P1
C25	22 N75 10%	#80X32						
C26	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C27	.047 200V		P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C28	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C29	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C30	.022 200V		P288N-022	DD-203	CUB4S22	4DP-2-223	GEM-2122	2TM-S22
C31	470		BPD-00047	DD-471	BYA10T47	CCD-470	GP347	10TS-T47
C32	9 N750		N750-SI 10	TCN-10	C10Q1U	CCTN-100	CN7-410	10TCU-Q10
C33	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C34	1000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C36	33 N750 10%	Note 3	N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C37	47 N750 10%	Note 3	N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C39	100 N150	#80X8				*		10TCP-T10
C40	220 10%		DI-220	DD-221	L10T22	CCD-221	GP322	10TS-T22

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C41	50000		BPD-05	DD-503	CUB6S5	6DP-3-503	GP150	5HK-S50
C42	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C44	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C45	82 10%		1469-000082	TCZ-82	22R5Q82	CM-20B-820K	CNO-482	MS-482
C46	lmfd 100V		P288N-1.0		CUB2W1		GEM-21	2TM-M1
C47	.0047 400V 10%		V84C4D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C48	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C49	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C50	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C51	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C52	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C53	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C54	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C55	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C56	82 10%		1469-000082	TCZ-82	22R5Q82	CM-20B-820K	CNO-482	MS-482
C57	.0047 400V 10%		V84C4D47-10%		PM6D47	6DP-1-472	JL-247	6TM-D47
C58	330 10%		DI-330	DD-331	L10T33	CCD-331	GP333	10TS-T33
C59	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C60	1500		SI 1500	D6-152	BYA10D15	CCD-152	GP215	5HK-D15
C61	.0047 200V		P288N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C62	.047 400V		P488N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C63	10000	Note 2	BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C64	10000		BPD-01	DD-103	BYA10S1	CCD-103	GP110	5HK-S10
C65	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. "B" Versions combine C8 and C9 in a dual 27mmf unit.
Note 2. Not used in some versions.
Note 3. "B" versions use 100mmf
Airline Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AIRLINE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	36X425					Level, Right Channel
	200K Tap							
B	2meg	½						Level, Left Channel
	200K Tap							
R2A	3meg	½	36X421					Balance, Left Channel
B	3meg							Balance, Right Channel
R3A	1meg	½	36X422	B-70	AD47-1meg-Z		FA16A	Bass, Right Channel
B	1meg			SR-70	Not Req.		RU16A	Bass, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	500K	½	36X420	B-60	AD47-500K-Z		FA55A	Treble, Right Channel
B	500K			SR-60	Not Req.		RU55A	Treble, Left Channel
C	Shaft			Not Req.	FS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	10K 2W				R37	1000Ω			
R6	56Ω			Note 1	R38	10meg			
R7	330K				R39	390K			
R8	220K				R40	470K			
R9	180K				R41	33K			
R10	100K				R42	180K			
R11	3900Ω			Note 1	R43	100K			
R12	4.7meg				R44	220K			
R13	220K				R45	560Ω			
R14	100K				R46	6800Ω			
R15	10K				R47	180K			
R16	2.2meg				R48	220K			
R17	2.2meg				R49	130Ω 5W	PW5-130	5W-SQ-130	
R18	4700Ω				R50	220Ω			
R19	180Ω				R51	18K			
R20	6800Ω				R52	1meg			
R21	1.5meg				R53	100K			
R22	12K				R54	470K			
R23	68K				R55	33K			
R24	100Ω				R56	180K			
R25	39K				R57	100K			
R26	4700Ω				R58	220K			
R27	68Ω				R59	560Ω			
R28	47K				R60	6800Ω			
R29	47K				R61	180K			
R30	15K				R62	220K			
R31	15K				R63	220Ω			
R32	100K				R64	820Ω 2W			
R33	100K				R65	820Ω 2W			
R34	18K				R66	4700Ω 5W	PW5-4700	5W-SQ-4700	
R35	1meg				R67	68Ω			
R36	100K								

Note 1. Not used in "B" versions

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	FM Ant. Coil	34A-1002					①10K resistor used in "B" versions.
L2	Cathode Choke	34A-1002-01					②Not use in "B" versions.
L3A	FM RF Coil	34A-1006					
B	FM Osc. Coil						
L4	RF Choke (9.5uh)	31T-2081 ①	BC-566	4612	RTC-8522	T860	
L5	Fil. Choke	34A-575 ②					

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		AIRLINE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L6	1st FM IF Trans.	31U-618					
L7	2nd FM IF Trans.	9A2440	FM-254	1463	RTC-8599	T633	
L8	Loopstick	BC-418	BC-418	705-A		T532	
L9	AM Mixer Coil	9A2456					
L10	AM Osc. Coil	9A2455					
L11	1st AM IF Trans.	9A2443	BC-352	12-C1	RTC-8632	T607	
L12	3rd FM IF Trans.	9A2440	FM-254	1463	RTC-8599	T633	
L13	2nd AM IF Trans.	9A2443	BC-353	12-C2	RTC-8633	T608	
L14	Discriminator	9A2450	FM-253	1464	RTC-8665	T634	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .9A	640VCT @ .12A	5V @ 2A	53X385		PM-8422 ①	22R06		① Drill new mounting hole.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 4.3A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	AIRLINE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	3300Ω CT	6-8Ω CT	51X211		A-3876 ①			① Drill new mounting holes.
T3	1900Ω	3-4Ω	51X212					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	AIRLINE PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	12A562 ①		① Some versions may use an 8" (Part #12A570)
SP2	5"	PM	3-4Ω	12A563		② Some versions may use a 3½" (Part #12A571A)
SP3	4"	PM	3-4Ω	12A543 ②	4A07	
SP4	12"	PM	6-8Ω	12A562 ①		
SP5	5"	PM	3-4Ω	12A563		
SP6	4"	PM	3-4Ω	12A543 ②	4A07	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	AIRLINE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1 M2	60-75	E98XD (LP)	13TB	Not Req.	26S	S1-1*	8TA4-S	N-8TAS*	
		E98 (78RPM)				S3-3*			

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
M3	FM Tuner	25A1190	Complete, "A" Version Models
	FM Tuner	25A1196	Complete, "B" Version Models
M4	Tuning Cap.	14A237	3 Gang (Ant. 39-515mmf, RF 12-204mmf, Osc. 13-80mmf)
M5	Switch	2A517	Function

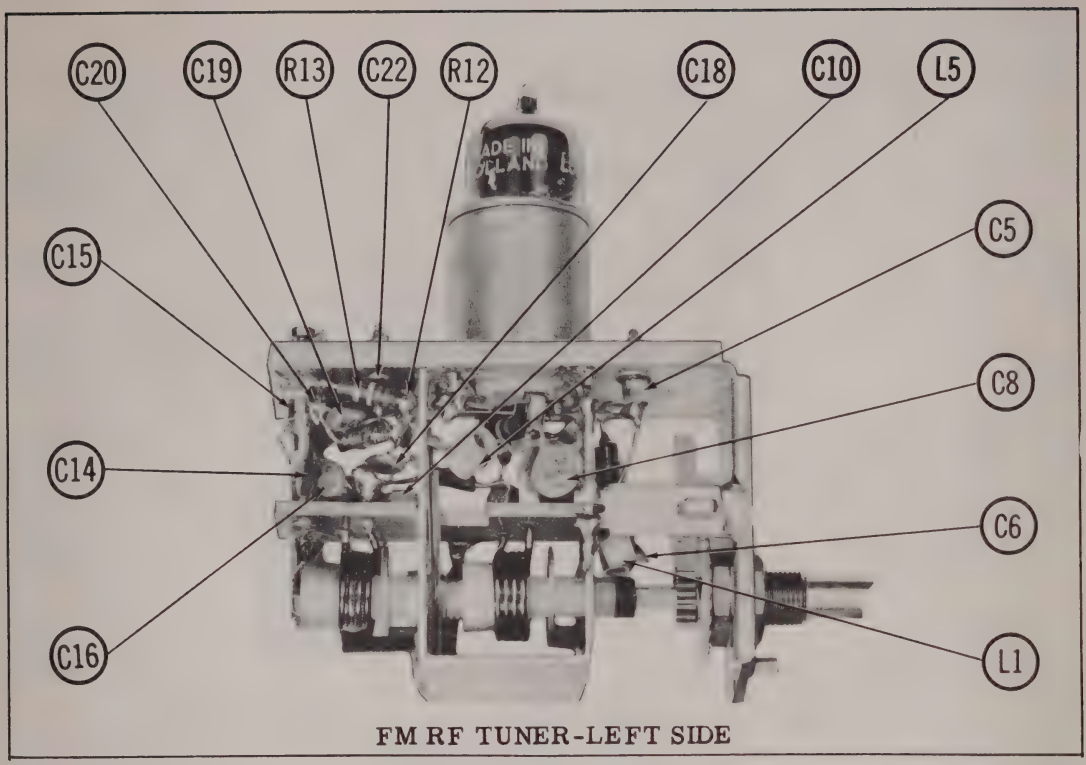
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

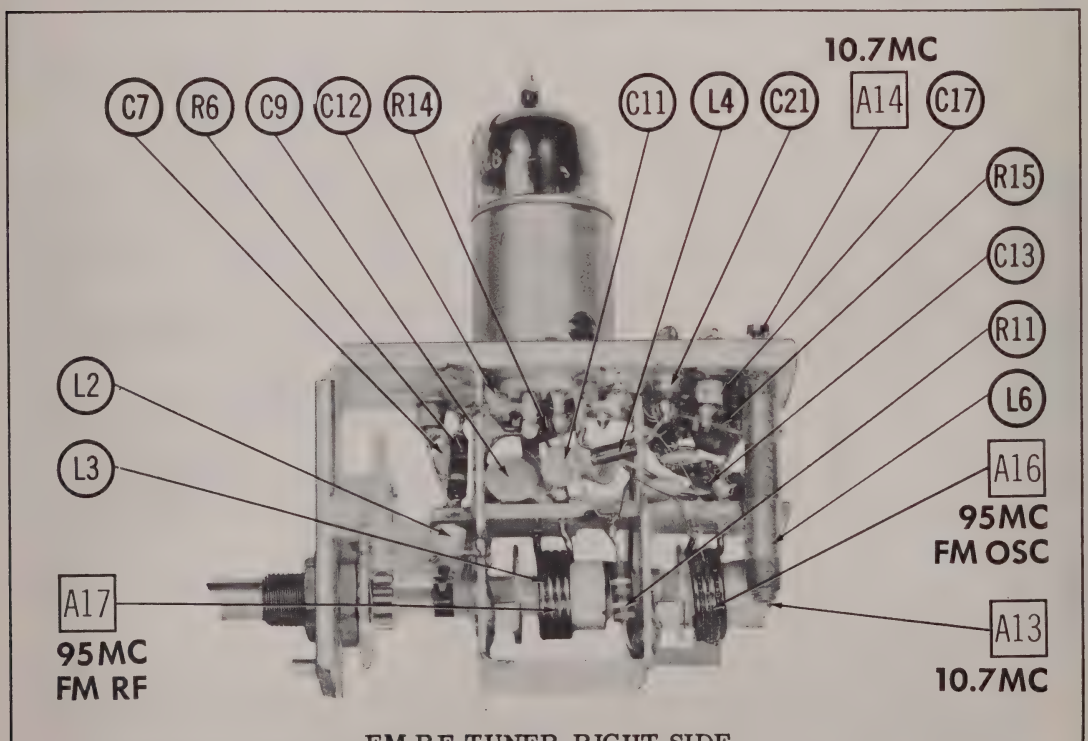
NAME	PART NO.	DESCRIPTION
Knob	10A959-1	
Dial Glass	58X822	
Dial Pointer	15X285-3	
Escutcheon	4X151	

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



FM RF TUNER-LEFT SIDE



FM RF TUNER-RIGHT SIDE

PHOTOFACT® Folder

AMERICAN MOTORS MODELS 8990831, 8990832

AMERICAN MOTORS MODELS
8990831, 8990832

MODEL 8990832

TRADE NAME	American Motors Models 8990831 (13MAM), 8990832 (13MA) for 1960 Rambler American
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	Battery Operated 3 Tube - 2 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery RATING 1 Amp. @ 12.6 Volts DC
TUNING RANGE	BROADCAST 540 - 1610KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4 .... GENERAL CEMENT #8282, 8606, 8606L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8, A9, A10 .. GENERAL CEMENT #8271, 8279, 8897, 9050L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Antenna receptacle thru .1mfd. Low side to chassis.	262.5KC (400~ Mod.)	High end stop	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1610KC	"	"	A5, A6, A7	Adjust for maximum output. (A6 not used in Manual Tuning models).
	Step 3 is not necessary unless tuner has been tampered with or components replaced. If necessary, back tuning cores (A8, A9, A10) out of coil forms. (A9 not used in manual tuning models). Repeat step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1020KC	Tuner carriage 9/16" from high end stop.	Across voice coil	A8, A9, A10	Adjust for maximum output. Repeat steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT (Model 8990832)

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

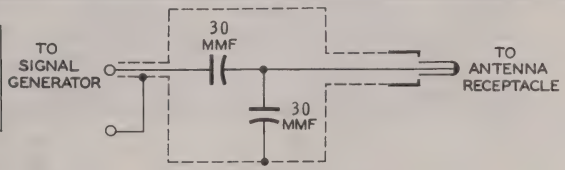


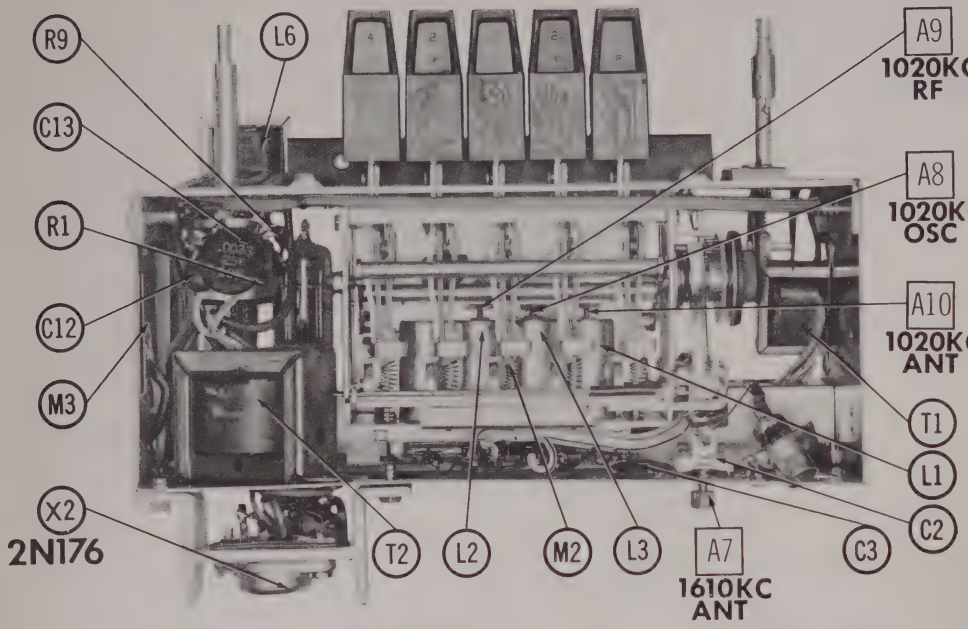
FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

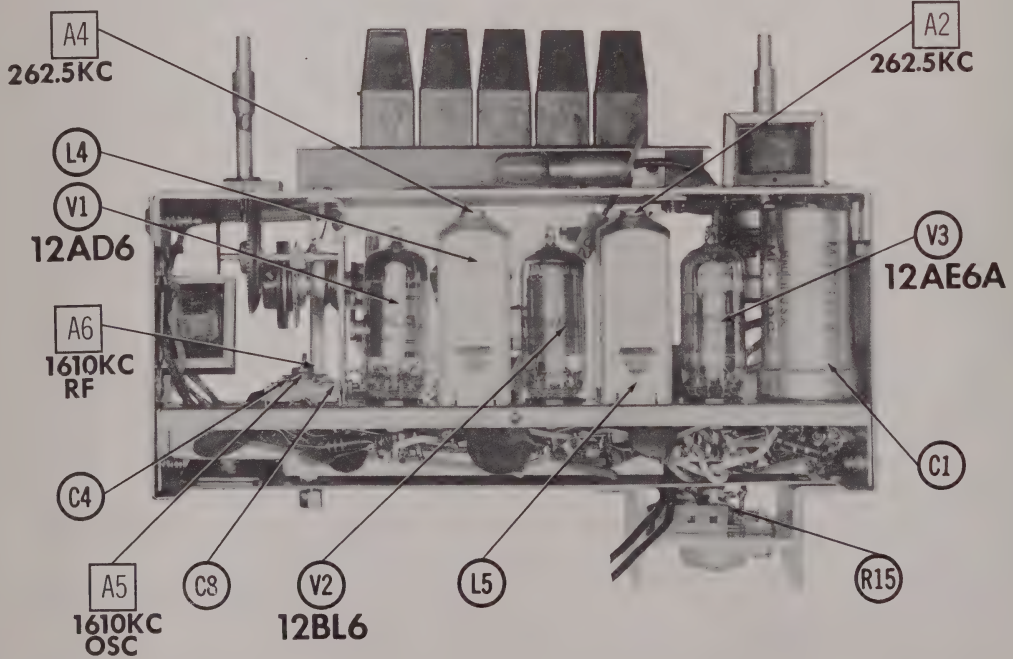
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

KD796

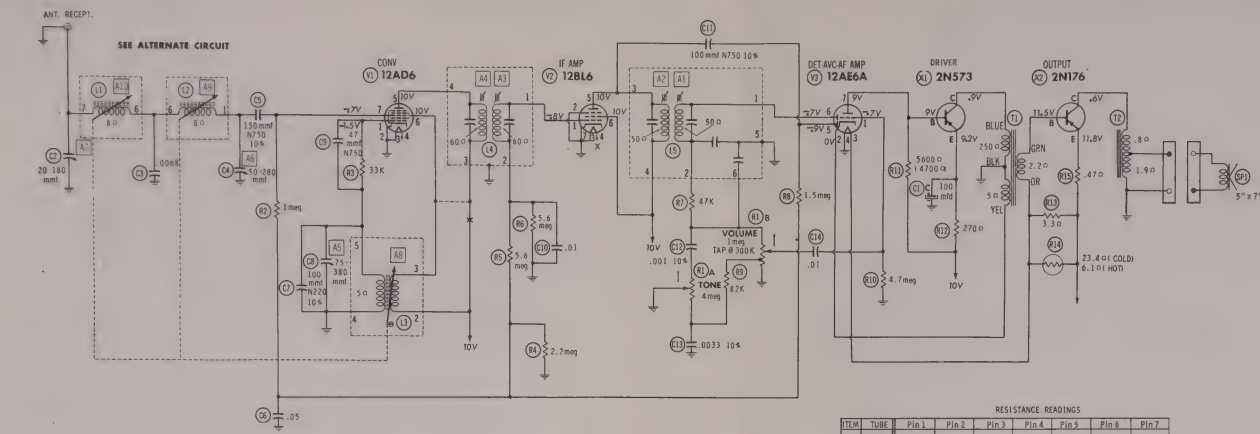
SET 549 FOLDER 5



CHASSIS-TOP VIEW



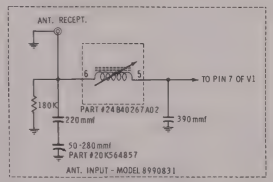
CHASSIS-BOTTOM VIEW

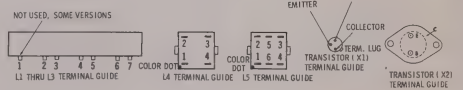


RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12AD6	33K	0 Ω	0 Ω	4 Ω	400 Ω	350 Ω	3 meg
V2	12BL6	3.5 meg	0 Ω	4 Ω	0 Ω	410 Ω	350 Ω	0 Ω
V3	12AE6A	4.7 meg	5 Ω	5 Ω	0 Ω	3.4 meg	800 K	

TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN ON X1 AND X2 BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.





A PHOTOFACT STANDARD NOTATION SCHEMATIC
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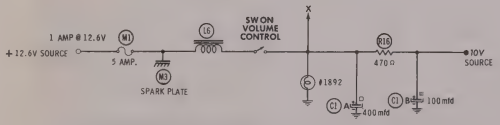
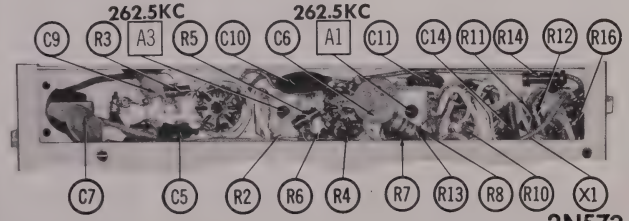


DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



CHASSIS-END VIEW

AMERICAN MOTORS MODELS 8990831, 8990832

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC)	TYPE (RAYTHEON)	TYPE (SYLVANIA)
V1	Converter	12AD6		
V2	IF Amplifier	12BL6		
V3	Detector - AVC - , AF Amp.			12AE6A

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA: RCA PART No.	REPLACEMENT DATA: RAYTHEON PART No.	REPLACEMENT DATA: SYLVANIA PART No.	NOTES
X1	2N573	Driver	2N591	2N573	2N573	PNP
X2	2N176	Output	2N176		2N176	PNP Note 1

Note 1. When replacing, apply DC-4 grease (Part #1M490487)or equivalent to both sides of insulation. Tighten mounting screws securely.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING: CAP.	RATING: VOLT.	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▪400	16	23B542329	AFH3-00-90		WP300.5		TVLS-3025 *	
B	▲100	16							
C	100	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	20-180	#20K564265 ①				463		
C3	.0068	(390) †	BPD-0068	DD-682	BYA10D68	CCD-682	B-268	5HK-D68
C4	50-280	#20A77536 ②				464		
C5	150 N750 10%	②	N750-DI 150	DTN-150	C10T15U	CCTN-151	CN7-315	10TCU-T15
C6	.05		BPD-05	DD-503	CUB255	1DP-2-503	GP150	5HK-B50
C7	100 N220 5%	#21R124032				*		10TCR-T10
C8	75-380	#20K564643				465		
C9	47 N750		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C12	.001 10%		DI-1000	DD-102	5R5D1	CCD-102	GP210	10TS-D10
C13	.0033 10%		DI-3300		DPMS6D33	CCD-332	JL-233	10TS-D33

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C14	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
Note 1. Part #20K564657 (50-280mmf) used in Model 8990831. † Alternate Value used in Model 8990831.
Note 2. Not used in Model 8990831. # Motorola Part Number.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	4meg		18C40344A01					Tone
B	1meg							Volume
	300K Tap							
C	Switch							Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R2	1meg			
R3	33K			
R4	2.2meg			
R5	5.6meg			
R6	5.6meg			
R7	47K			
R8	1.5meg			
R9	82K			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: WORKMAN TV PART No.	REMARKS
R10	4.7meg			
R11	5600Ω			(4700Ω) *
R12	270Ω			
R13	3.3Ω			
R14	23.4Ω (Cold)			Pt. #6K540634
	6.1Ω (Hot)			
R15	.47Ω			
R16	470Ω			

* Value used in Model 8990831.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: Merit PART No.	REPLACEMENT DATA: Miller PART No.	REPLACEMENT DATA: Stancor PART No.	REPLACEMENT DATA: Workman TV PART No.	NOTES
L1	Ant.	24B563217					Note 1
L2	RF	24B563217					Note 2
L3	Osc.	24B563214					Note 3
L4	Input IF	24K564264		BC-344	12-H1	RTC-8638	T604
L5	Output IF	24C564263		BC-346	12-H6	RTC-8640	T606

Note 1. Part #24B40267A02 used in Model 8990831.
Note 2. Not used in Model 8990831.
Note 3. Part #24K564644 used in Model 8990831.

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L6	1A	.4Ω	1.4 MH	25K564320					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	40	1	24C40345A01					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA					NOTES
	PRI.	MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	10Ω Tap @ 3-4Ω	25K564853-1					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	50C40196A01	57A15	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	AGA	5A	65R122345		301005. (AGA 5A)	155004	AGA-5	HAF

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Tuner	77D40078A01	(AT-328) Pushbutton Type, Complete - Model 8990832
	Tuner	77D40307A01	(MAT-334) Complete - Model 8990831
M3	Spark Plate	64K535152	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Scale	34C40194A01	
Dial Pointer	1B40023A03	
Pushbutton	38K564822	Model 8990832
Knob	1A563859	Tuning, Volume
Knob	36K564823	Tone, Dummy

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

PHOTOFACT® Folder with CIRCUITRACE®

CHANNEL MASTER MODEL 6510

CHANNEL MASTER
MODEL 6510

CHANNEL MASTER
MODEL 6510

TRADE NAME	Channel Master Model 6510		
IMPORTER	Channel Master Corp. Ellenville, N. Y.		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	6 Volts DC	RATING	8MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC		15MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

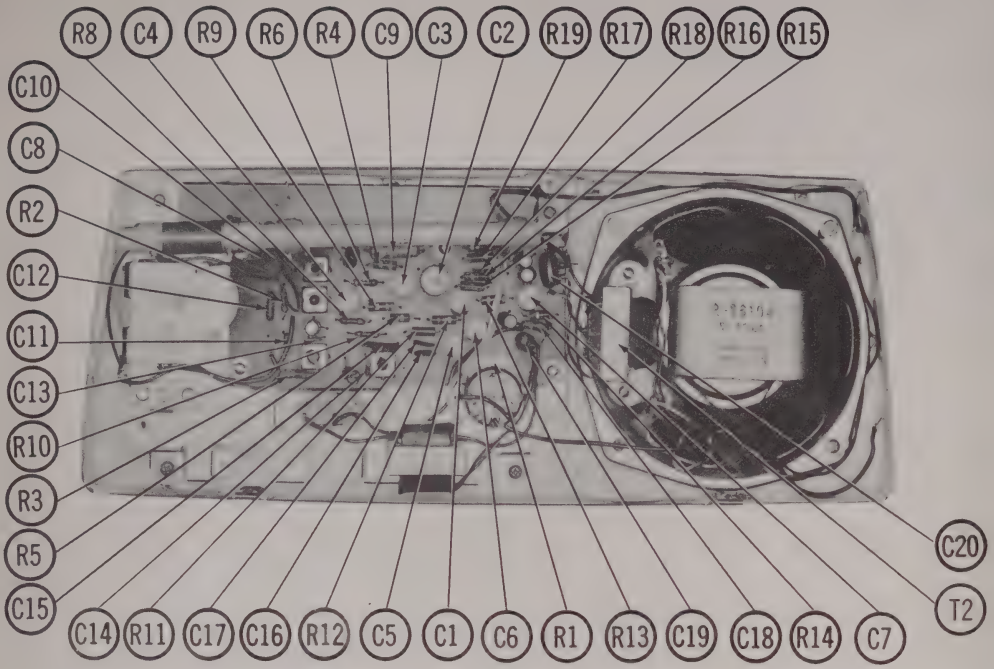
Suggested Alignment Tools: A1 thru A4....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A5, A7.....GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Fashion loop of several turns of wire and radiate signal into loop of receiver.	455KC (400~ Mod.)	Tuning gang fully closed.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	"	530KC	"	"	A4	"
3.	"	1650KC	Tuning gang fully open.	"	A5	"
4.	"	600KC	600KC	"	A6	Adjust for maximum output. Repeat Steps 2 and 3.
5.	"	1400KC	1400KC	"	A7	Adjust for maximum output. Repeat Steps 4 and 5.

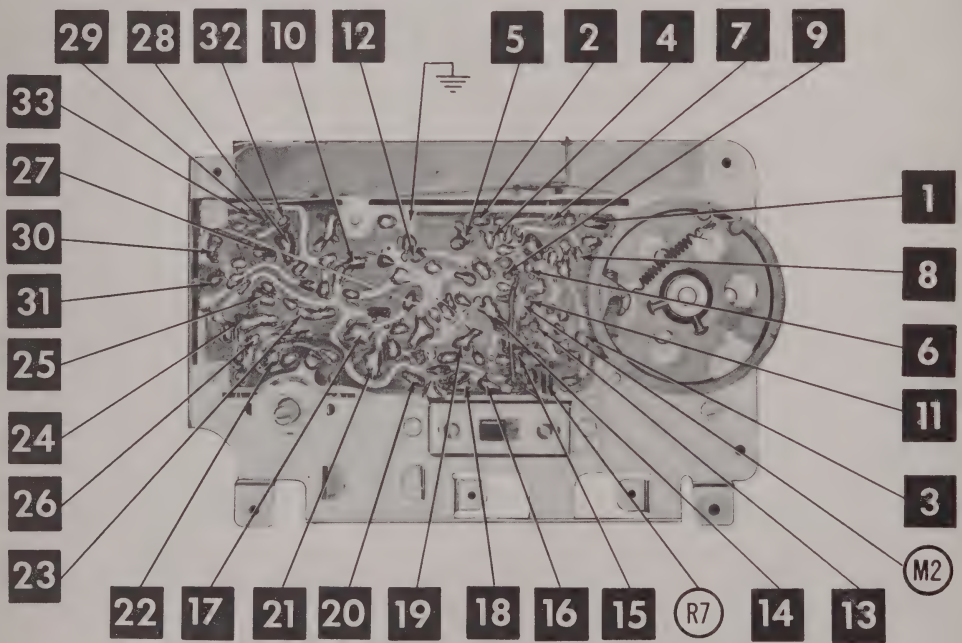
HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG730

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



CHASSIS TOP VIEW-CAPACITOR & RESISTOR IDENT.



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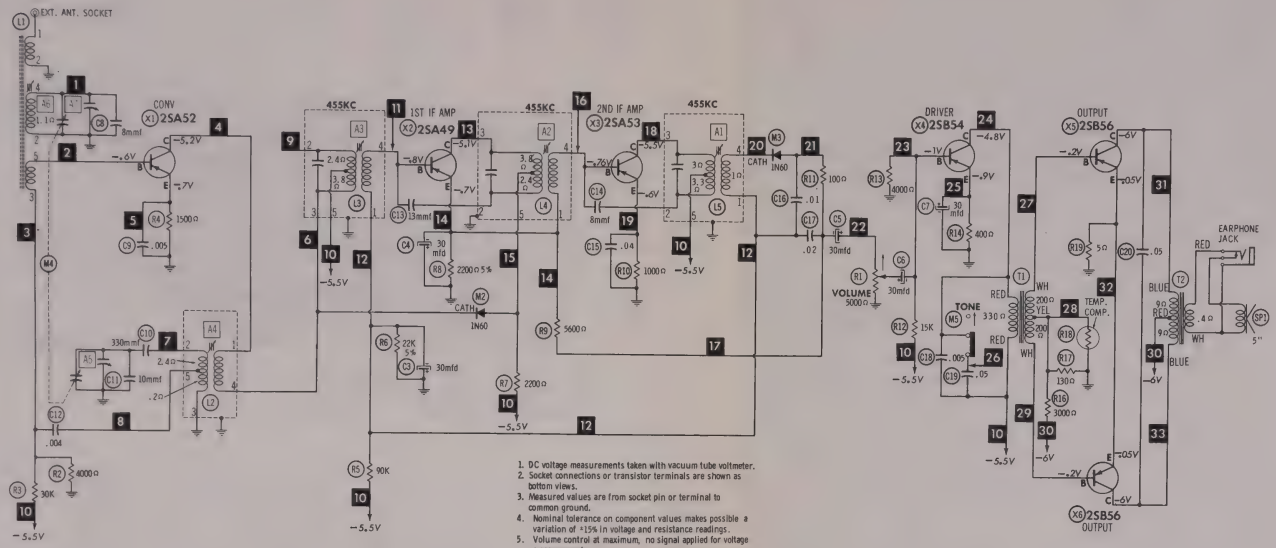
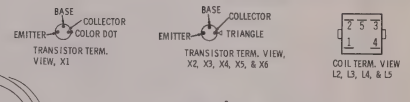
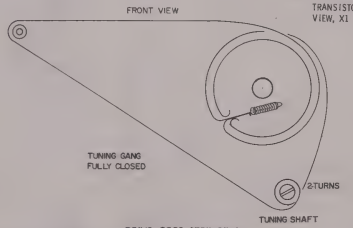
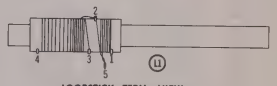
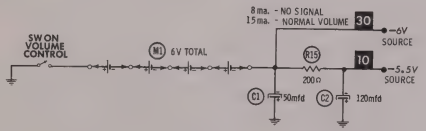

EXT. ANT. SOCKET
CONV X1 2SA52
1ST IF AMP X2 2SA49
2ND IF AMP X3 2SA53
455KC
DRIVER X4 2SB54
OUTPUT X5 2SB56
OUTPUT X6 2SB56
VOLUME 5000Ω
TONE
TEMP. COMP.
EARPHONE JACK
CATH 1N60
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.









DRIVE CORD STRINGING

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

CHANNEL MASTER MODEL 6510

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA52	Converter				PNP
X2	2SA49	1st IF Amplifier				PNP
X3	2SA53	2nd IF Amplifier				PNP
X4	2SB54	Driver	2N406			PNP
X5	2SB56	Output	2N408			PNP } Matched Pair
X6	2SB56	Output	2N408			PNP } Matched Pair

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Channel Master PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	9	A031	BCD10050	ECPB415	PET1575	MLV50-10	VL-1134	
C2	120	10	A023	BCD12150	ECPB418	PET1400	MLV150-12	VL-1144	
C3	30	6	A009	BCD6035	ECPB412	TT6X30	MLV30-6	VL-1092	
C4	30	6	A009	BCD6035	ECPB412	TT6X30	MLV30-6	VL-1092	
C5	30	6	A009	BCD6035	ECPB412	TT6X30	MLV30-6	VL-1092	
C6	30	6	A009	BCD6035	ECPB412	TT6X30	MLV30-6	VL-1092	
C7	30	6	A009	BCD6035	ECPB412	TT6X30	MLV30-6	VL-1092	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	8		NPO-DI 8, 2		C10V82C			10TCC-V82
C9	.005 150V		V84C6S5	DD-502	DPMS6D5	6DP-1-502	GEM-625	6TM-D50
C10	330		SI 330	D6-331	L10T33	CCD-331	GP333	10TS-T33
C11	10		NPO-DI 10	DTZ-10	L10Q10	CCD-100	GP410	10TS-Q10
C12	.004		SI 4000	D6-402	BYA10D4	CCD-402	B-240	5HK-D40
C13	13			TCZ-12	C10Q13C	CCTO-120	CNO-412	10TCC-Q10
C14	8		NPO-DI 8, 2		C10V82C			10TCC-V82
C15	.04	#A015		DD-403	BYB6S4	1DP-1-403	GP140	
C16	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C17	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C18	.005		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C19	.05 100V		P288N-05	DD-503	CUB285	1DP-2-503	GEM-415	2TM-S50
C20	.05 100V		P288N-05	DD-503	CUB285	1DP-2-503	GEM-415	2TM-S50

Channel Master Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Channel Master PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	½	E022					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	4000Ω				R11	100Ω			
R3	30K				R12	15K			
R4	1500Ω				R13	4000Ω			
R5	90K				R14	400Ω			
R6	22K 5%				R15	200Ω			
R7	2200Ω				R16	3000Ω			
R8	2200Ω 5%				R17	130Ω			
R9	5600Ω				R18	Temp. Comp.			Pt. #F150
R10	1000Ω								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Channel Master PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	E024	BC-419	705-A		T532	
L2	Osc.	F189					
L3	1st IF	C037					
L4	2nd IF	C038					
L5	3rd IF	C039					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1, 2	1	C035					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Channel Master PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	250Ω CT	3-4Ω	C036					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Channel Master PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	G096	5A15	

BATTERIES

ITEM No.	VOLTAGE	Channel Master PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			130 *		635 *		M-14R*	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Channel Master PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60	F136		1N60	1N60	Overload (Pigtail)
M3	1N60	F136		1N60	1N60	Detector (Pigtail)

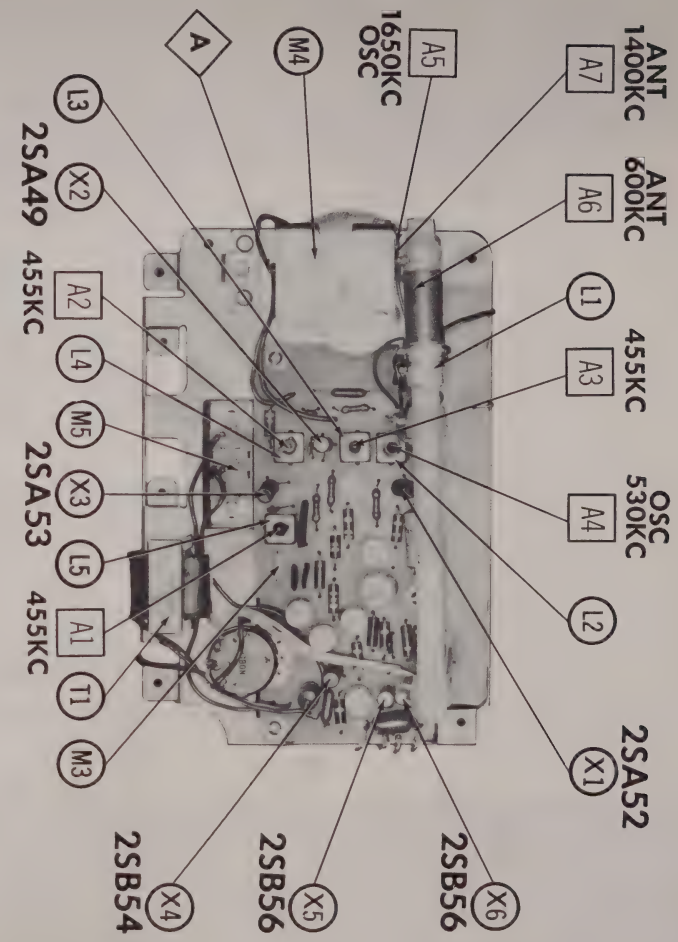
MISCELLANEOUS

ITEM No.	PART NAME	Channel Master PART No.	NOTES
M4	Tuning Cap.	A053	2 Gang
M5	Switch	E012	Tone (SPDT Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

CORONADO MODELS RA1-9268A, RA1-9269A, RA1-9270A

CORONADO MODELS RA1-9268A, RA1-9269A, RA1-9270A

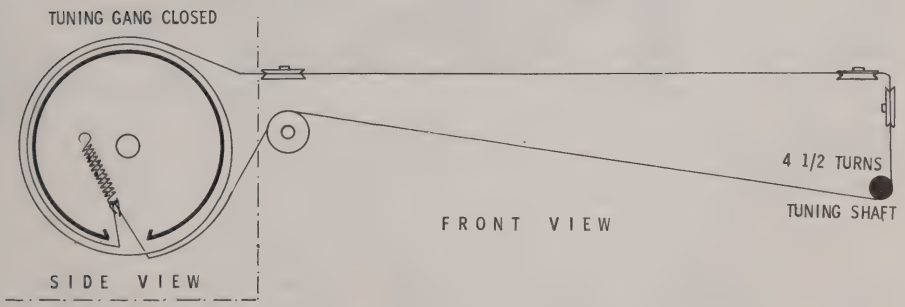
MODEL RA1-9269A

TRADE NAME	Coronado Models RA1-9268A, RA1-9269A, RA1-9270A		
SUPPLIER	Gamble-Skogmo, Inc., 15 N. Eighth Street, Minneapolis 8, Minnesota		
TYPE SET	AC Operated 9 Tube FM-AM Tuner, 2 Tube Stereo Preamplifier, 8 Tube Stereo Amplifier And 4 Speed Automatic Record Changer		
POWER SUPPLY	105 - 125 Volts AC, 60 Cycles	RATING	170 Watts, 1.6 Amp. @117 Volts AC (Less Motor)
TUNING RANGE—BROADCAST	535 - 1620KC	FREQ. MOD.	88 - 108MC

FOR SERVICE INFORMATION ON RECORD CHANGER PART #28A222 - SEE GARRARD RC121/MKII - PHOTOFACT SET 421 FOLDER 7 OR RECORD CHANGER MANUAL RC-12

CORONADO MODELS RA1-9268A, RA1-9269A, RA1-9270A

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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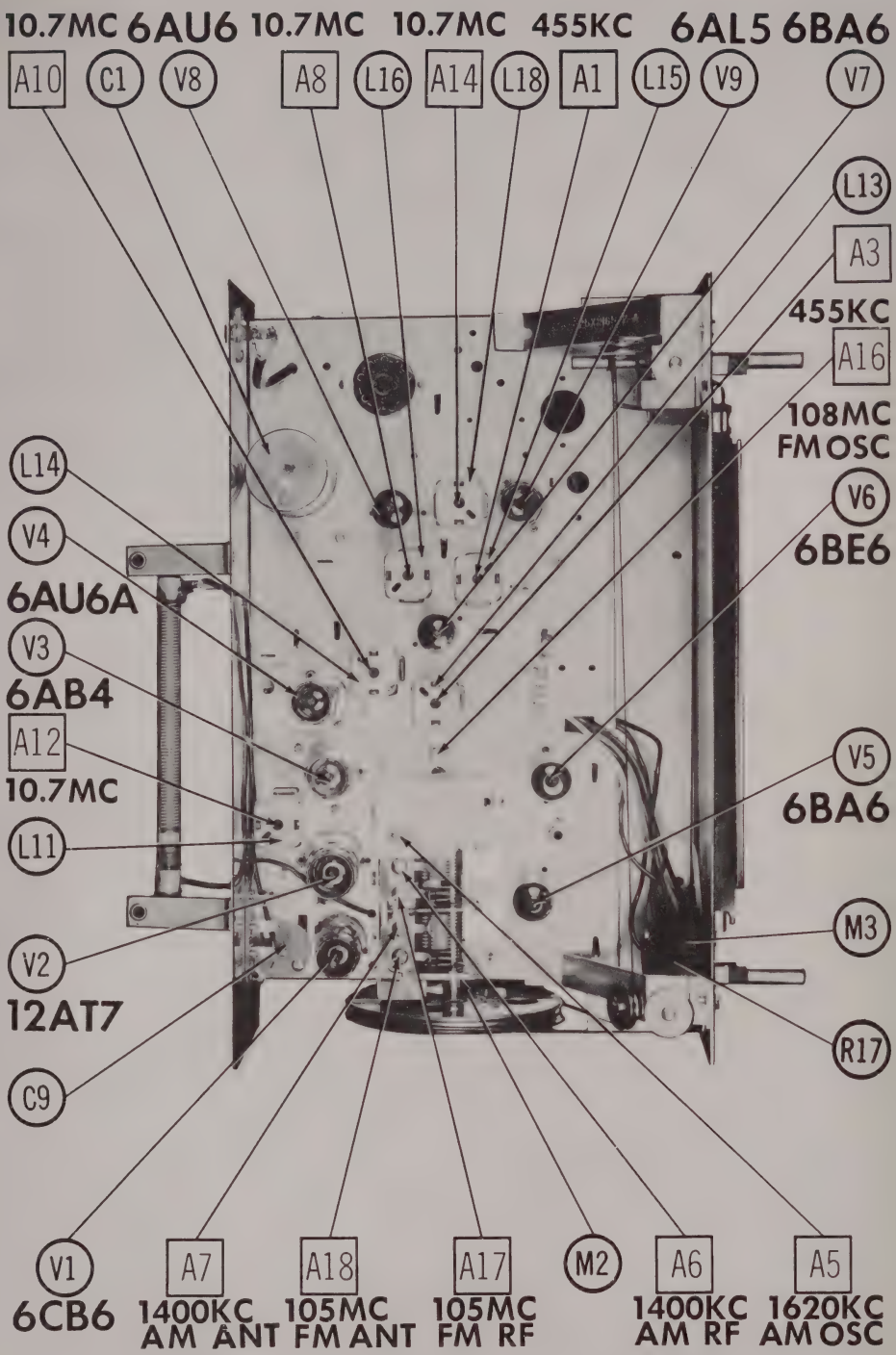
JN409R

DATE 10—61 SET 549 FOLDER 7

SET 549 FOLDER 7



TUNER CHASSIS — TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested alignment tools: A1 thru A4 and A8 thru A15..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A5, A6, A7, A16, A17, A18..... GENERAL CEMENT #5097, 8727
WALSCO #2515

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	Across output jack	A1, A2, A3, A4	Adjust for maximum output.
2.	"	"	1620KC	"	"	"	A5	"
3.	"	High side to pin 1 (grid) of AM RF Amp. Low side to chassis.	1400KC	"	1400KC	"	A6	"
4.	100mmf Ceramic Capacitor	High side to AM antenna terminal. Low side to chassis.	1400KC	"	1400KC	"	A7	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
6.	"	High side to pin 1 (grid) of FM Limiter. Low side to chassis.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A14	"
7.	"	"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open	Vert. amp. thru 100K to point Ⓐ. Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	High side to pin 1 (grid) of FM Limiter. Low side to chassis.	"	"	"	Vert. amp. thru 100K to point Ⓑ. Low side to chassis.	A14	"
7.	"	"	"	"	"	Vert. amp. thru 100K to point Ⓒ. Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Two 150Ω Carbon Resistor	Across FM antenna terminals with 150Ω in each lead.	108MC (Unmod.)	FM	108MC	DC probe to point Ⓐ. Common to chassis.	A16	Adjust for maximum deflection.
9.	"	"	105MC	"	105MC	"	A17, A18	Adjust for maximum deflection while rocking tuning gang.

FIG. 1

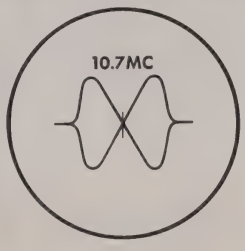
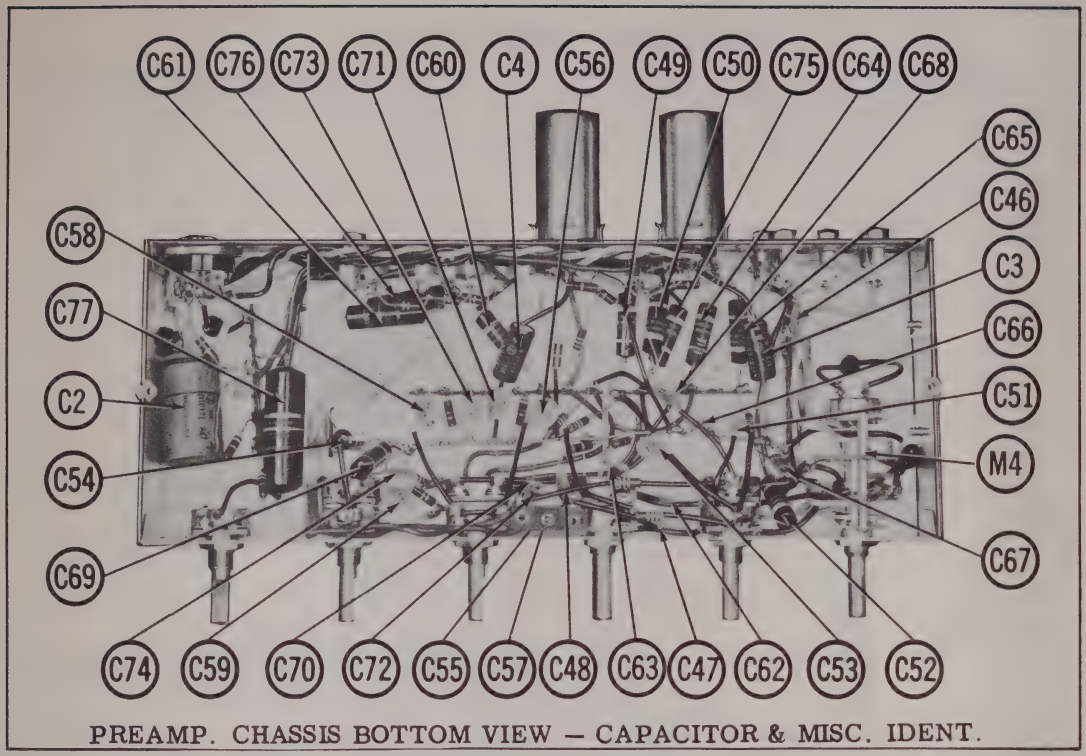
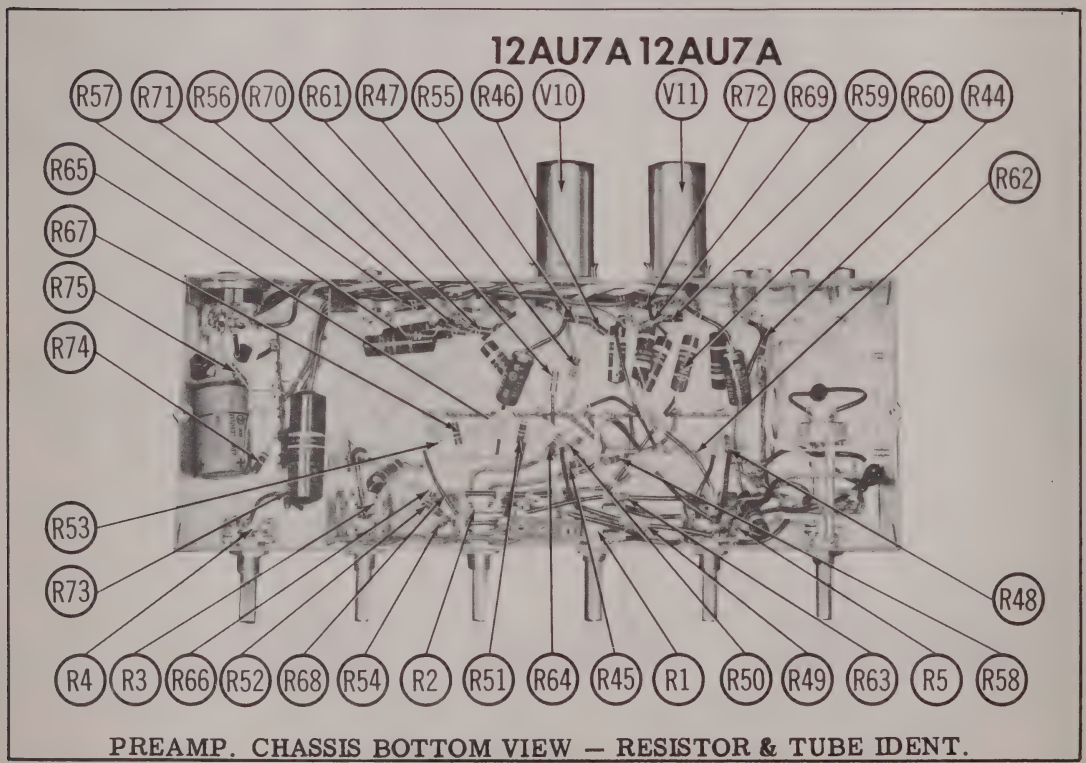


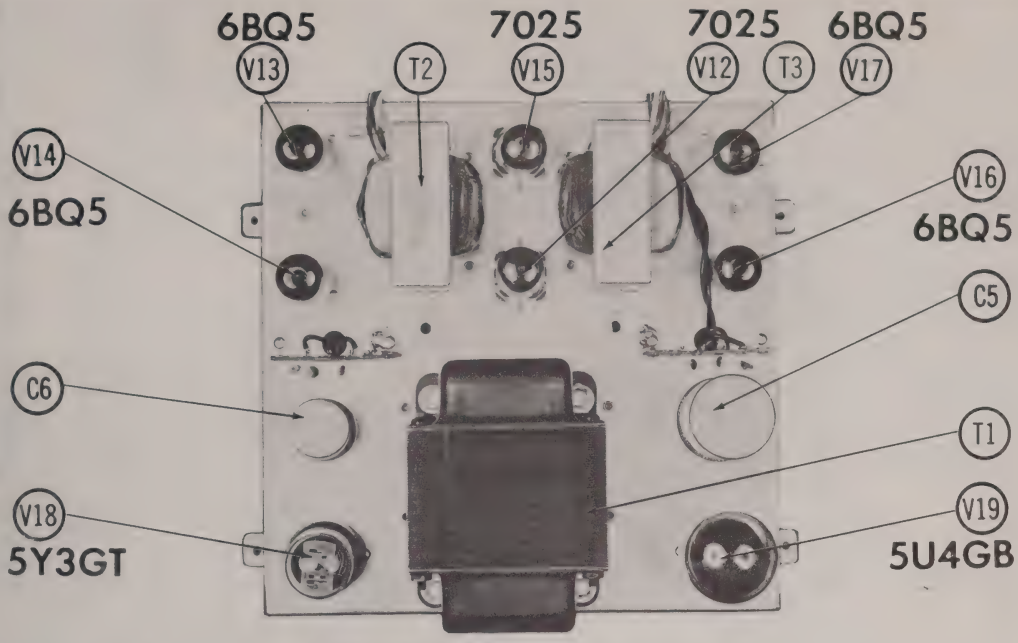
FIG. 2



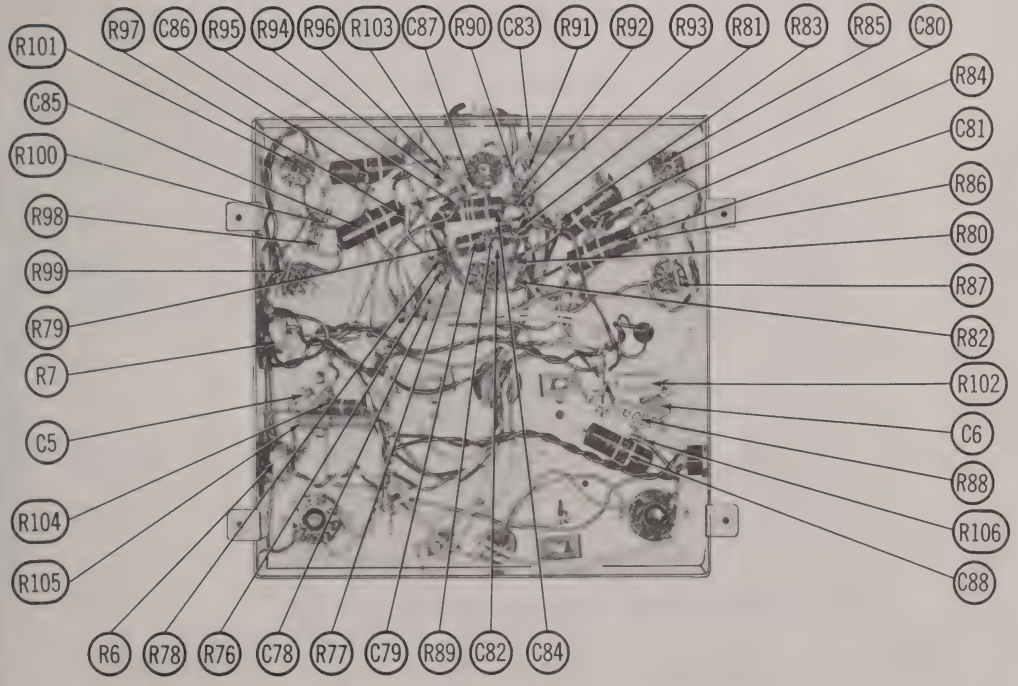
PREAMP. CHASSIS BOTTOM VIEW — CAPACITOR & MISC. IDENT.



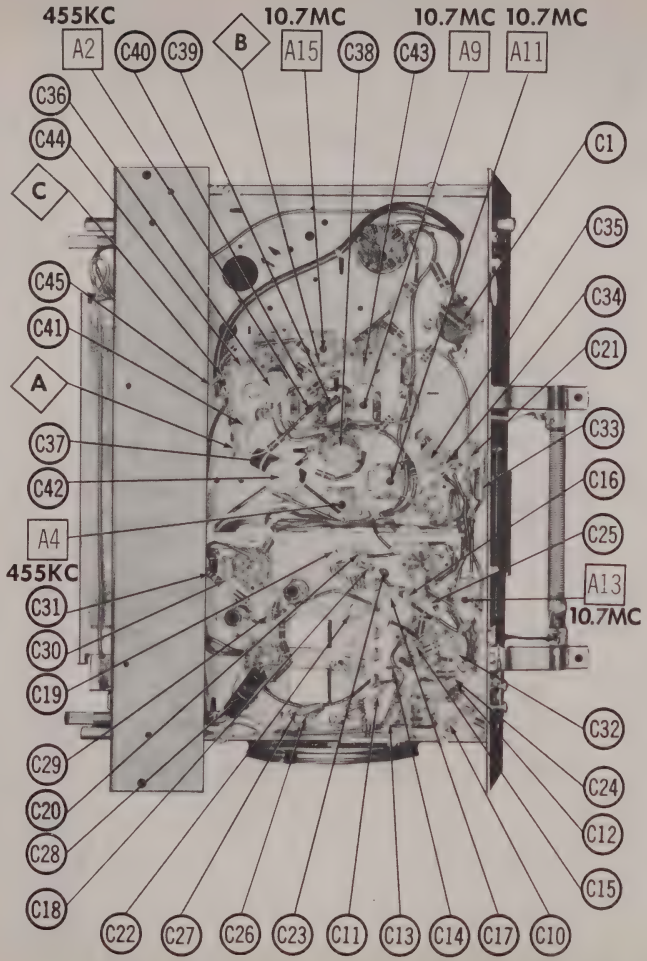
PREAMP. CHASSIS BOTTOM VIEW — RESISTOR & TUBE IDENT.



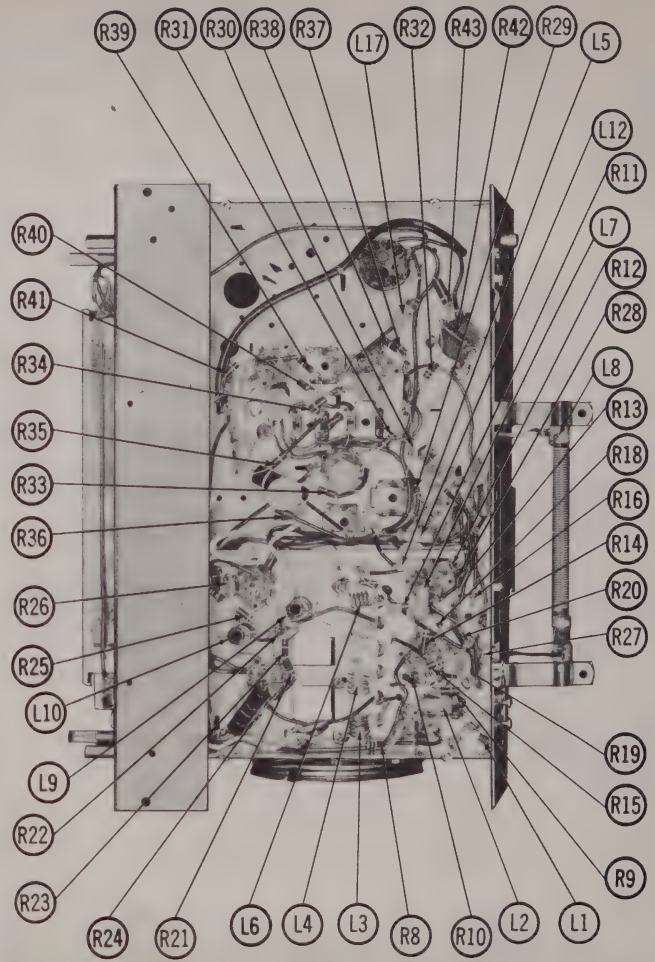
AMP CHASSIS – TOP VIEW



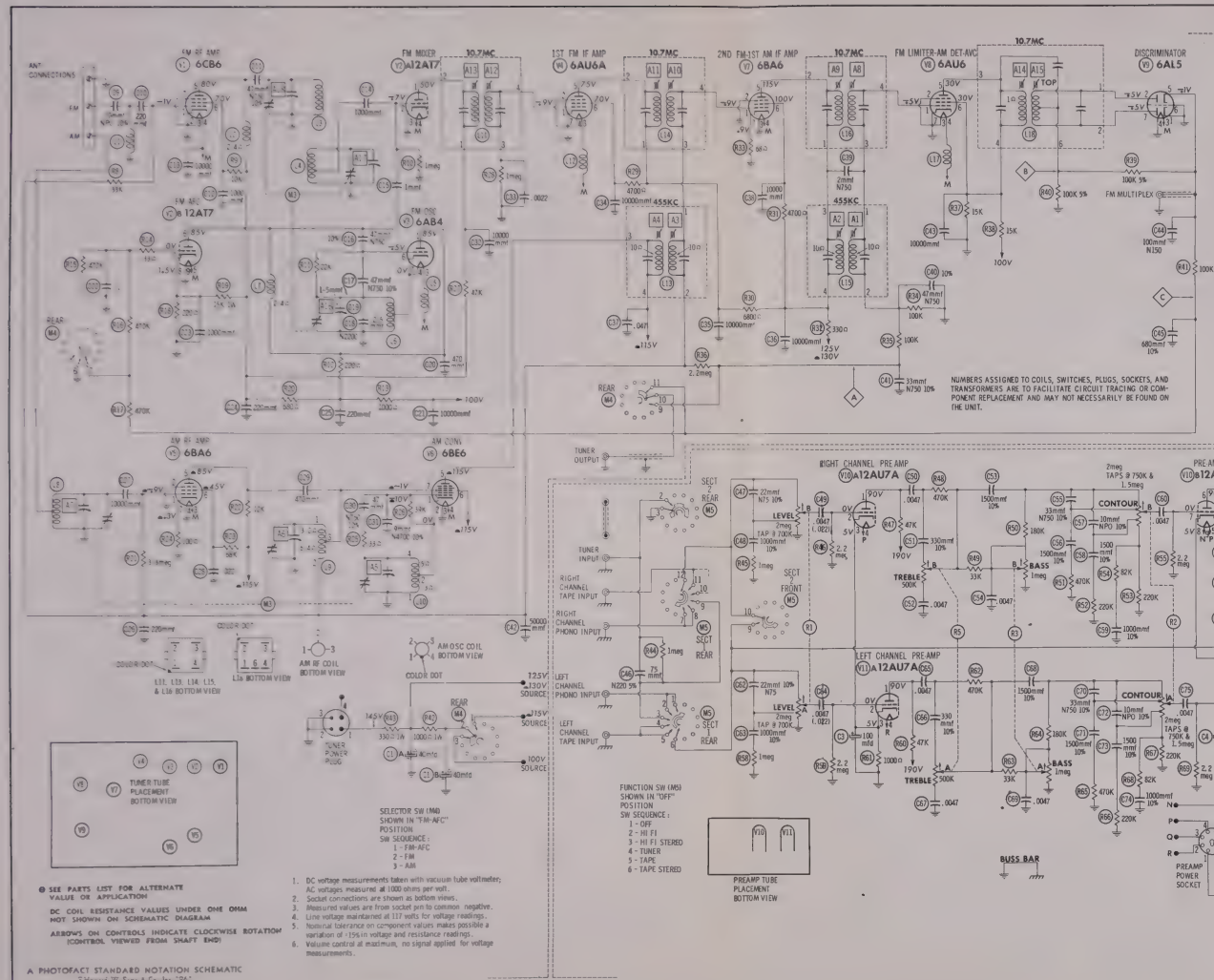
AMP CHASSIS – BOTTOM VIEW



TUNER CHASSIS BOTTOM VIEW



TUNER CHASSIS — BOTTOM VIEW


FM RF AMP 6CB6
FM MIXER 12AT7
1ST FM IF AMP 6AU6A
2ND FM-1ST AM IF AMP 6BA6
FM LIMITER-AM DET-AVC 6AU6
DISCRIMINATOR 6AL5
FM RF AMP 12AT7
FM OSC 6AB4
AM RF AMP 6BA6
AM CONV 6BE6
10.7MC
455KC
ANT. CONNECTIONS
TUNER OUTPUT
RIGHT CHANNEL PRE-AMP V10A 12AU7A
LEFT CHANNEL PRE-AMP V11A 12AU7A
PRE-AMP V10B 12AU7A
PRE-AMP V11B 12AU7A
CONTOUR
LEVEL
TREBLE
BASS
BALANCE
RIGHT CHANNEL TAPE INPUT
RIGHT CHANNEL PHONO INPUT
LEFT CHANNEL PHONO INPUT
LEFT CHANNEL TAPE INPUT
RIGHT CHANNEL OUTPUT
LEFT CHANNEL OUTPUT
TAPE OUTPUT
BUSS BAR
PREAMP POWER SOCKET
SELECTOR SW (M4) SHOWN IN "FM-AFC" POSITION
FUNCTION SW (M5) SHOWN IN "OFF" POSITION
SW SEQUENCE: 1 - OFF 2 - HI FI 3 - HI FI STEREO 4 - TUNER 5 - TAPE 6 - TAPE STEREO
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
TUNER TUBE PLACEMENT BOTTOM VIEW
PREAMP TUBE PLACEMENT BOTTOM VIEW
AM OSC COIL BOTTOM VIEW
AM RF COIL BOTTOM VIEW
L11, L13, L14, L15 & L16 BOTTOM VIEW
L16 BOTTOM VIEW
TUNER POWER PLUG
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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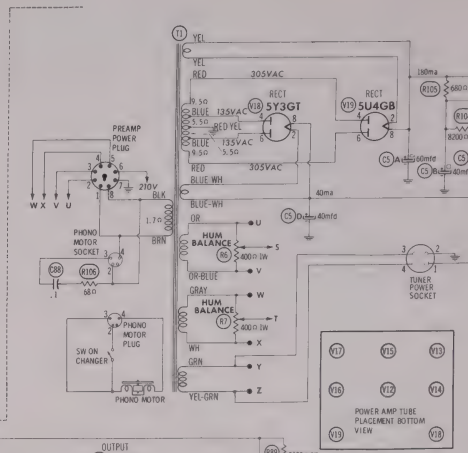
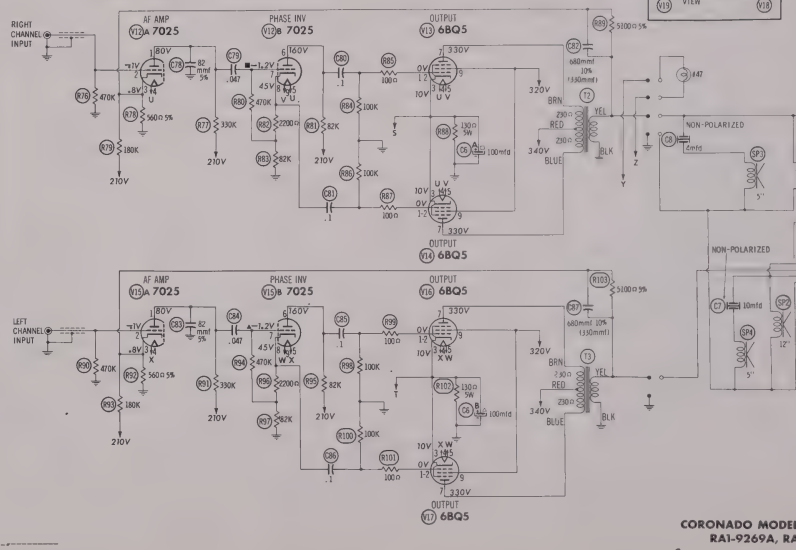
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	2.4meg	0Ω	0Ω	.1Ω	†3000Ω	†13K	0Ω		
V2	12AT7	†50K	1meg	0Ω	.1Ω	.1Ω	†2500Ω	▪ 700K 400K	220Ω	0Ω
V3	6AB4	†2500Ω	NC	.7Ω	0Ω	TP	22K	0Ω		
V4	6AU6A	1meg	0Ω	.5Ω	0Ω	†7500Ω	†11K	0Ω		
V5	6BA6	▲ 5.7meg	▲ 0Ω	.1Ω	0Ω	†▲ 13K	†▲ 69K	▲ 100Ω		
V6	6BE6	▲ 39K	▲ 5Ω	0Ω	.1Ω	†▲ 1300Ω	†▲ 1300Ω	▲ 2.4meg		
V7	6BA6	2.4meg	0Ω	0Ω	.1Ω	†660Ω	†5300Ω	68Ω		
V8	6AU6	100K	0Ω	0Ω	.1Ω	†12K	†12K	0Ω		
V9	6AL5	0Ω	100K	.1Ω	0Ω	150K	0Ω	100K		
V10	12AU7A	†† 57K	2.2meg	1000Ω	230Ω	230Ω	†145K	2.2meg	1000Ω	230Ω
V11	12AU7A	†† 57K	2.2meg	1000Ω	230Ω	230Ω	†145K	2.2meg	1000Ω	230Ω
V12	7025	†† 340K	470K	560Ω	230Ω	230Ω	†† 90K	550K	84K	230Ω
V13	6BQ5	100K	100K	130Ω	230Ω	230Ω	NC	†† 230Ω	NC	†† 660Ω
V14	6BQ5	100K	100K	130Ω	230Ω	230Ω	NC	†† 230Ω	NC	†† 660Ω
V15	7025	†† 340K	470K	560Ω	230Ω	230Ω	†† 90K	550K	84K	230Ω
V16	6BQ5	100K	100K	130Ω	230Ω	230Ω	NC	†† 230Ω	NC	†† 660Ω
V17	6BQ5	100K	100K	130Ω	230Ω	230Ω	NC	†† 230Ω	NC	†† 660Ω
V18	5Y3GT	NC	¶	NC	5.5Ω	NC	5.5Ω	NC	¶	
V19	5U4GB	NC	¶	NC	15Ω	NC	15Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT. ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM PIN 8 OF V12.
†† MEASURED FROM PIN 8 OF V13.
▪ MEASURED FROM PIN 8 OF V14.
▲ MEASURED FROM PIN 8 OF V15.
NC NO CONNECTION
MEASURED IN "FM-AFC" POSITION.
MEASURED IN "AM" POSITION.





CORONADO MODELS RA1-9268A, RA1-9269A, RA1-9270A

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6CB6
V2	FM Mixer-AFC	12AT7
V3	FM Osc.	6AB4
V4	lst FM IF Amp.	6AU6A
V5	AM RF Amplifier	6BA6
V6	AM Converter	6BE6
V7	2nd FM IF Amp. - lst AM IF Amp.	6BA6
V8	FM Limiter - AM Det. - AVC	6AU6
V9	Discriminator	6AL5
V10	Right Channel Preamp.	12AU7A (ECC82)
V11	Left Channel Preamp.	12AU7A (ECC82)
V12	Right Channel AF Amp. - Right Channel Phase Inv.	7025
V13	Right Channel Output	6BQ5 (EL84)
V14	Right Channel Output	6BQ5 (EL84)
V15	Left Channel AF Amp. - Left Channel Phase Inv.	7025
V16	Left Channel Output	6BQ5 (EL84)
V17	Left Channel Output	6BQ5 (EL84)
V18	Rectifier	5Y3GT
V19	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CORONADO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	200	45X454	AFH2-57	B0450	FP217.87	TMD-31	TVL-2575	
B	▲40	200							
C2	20	350	45X455	PRS450V20	BR2035	TC65	TD-20-350	TVA-1608	
C3	100	10	45X459	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C4	100	10	45X459	SRE12V100	NLW100-10	TT15X100	ML100-15	TE-1119.3	
C5A	▲60	400	45X450		C0350	FP377		TVLS-4671l.1*	
B	■40	400			BR6045	TC795			
C	▲40	400							
D	40	200							
C6A	■100	25	45X457	AFH2-06-20	B0085	WP202.5	TMD-107	TVL-2326	
B	▲100	25							
C7	10	50NP	45X461	NP-PRS350VNP10	BBR20-150 †	TCN5010		TVAS-1304.1*	Note 1
C8	4	50NP	45X458	NP-PRS50VNP4	BBR8-150 †	TCN504		TVAS-1302.5*	Note 1

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negatuve terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

Note 1. Alternate Value 5mfd (Part #45X426)

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C10	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C11	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C12	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C14	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10
C15	1		NPO-SI 1.0	TCZ-1	C10V15C		CNO-510	10TCC-V10
C16	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C17	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C18	2.5 N2200	#47X635						
C19	1-5	#17A274		829-6				
C20	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P1
C23	1000		BPD-001	DD-102	BYA10D1M	CCD-102	B-210	5HK-D10
C24	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C25	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C26	220		BPD-00022	DD-221	L10T22	CCD-221	B-322	5GA-T22
C27	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.022 200V		P288N-022		CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C29	470		BPD-00047	DD-471	BYA10T47	CCD-471	B-347	5GA-T47
C30	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C31	9 N4700 10%	#47X632						
C32	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.0022 200V		P288N-0022	D6-222	CUB6D22	6DP-1-222	GEM-6222	6TM-D22
C34	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	.047 400V		P488N-047	DF-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C38	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	2 N750	#47X628						
C40	47 N750 10%		N750-DI 47	DTN-47	C10Q47U	CCTN-470	CCN-447	10TCU-047
C41	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q47
C42	50000		BPD-05	DF-503	CUB2S5	6DP-3-503	TA-150	5HK-S50
C43	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C44	100 N150					*		
C45	680 10%		DI-680	D6-681	1R5T68	CCD-681	JL-368	MS-368
C46	75 N220 5%					*		
C47	22 N75 10%	#80X32						
C48	1000 10%		DI-1000		1R5D1	CCS-102	JL-210	MS-21
C49	.0047 400V	(.022) †	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C50	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C51	330 10%		DI-330	D6-331	L10T33	CCD-331	JL-333	MS-333
C52	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C53	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C54	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C55	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C56	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C57	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C58	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C59	1000 10%		DI-1000		1R5D1	CCS-102	JL-210	MS-21
C60	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C61	.022 400V	(.0047) †	P488N-022		CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C62	22 N75 10%	#80X32						
C63	1000 10%		DI-1000		1R5D1	CCS-102	JL-210	MS-21
C64	.0047 400V	(.022) †	P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C65	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C66	330 10%		DI-330	D6-331	L10T33	CCD-331	JL-333	MS-333
C67	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C68	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C69	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C70	33 N750 10%		N750-DI 33	DTN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C71	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C72	10 NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-Q10
C73	1500 10%		DI-1500		1R5D15	CCS-152	JL-215	MS-215
C74	1000 10%		DI-1000		1R5D1	CCS-102	JL-210	MS-21
C75	.0047 400V		P488N-0047	D6-472	CUB6D47	6DP-1-472	GEM-6247	6TM-D47
C76	.022 400V	(.0047) †	P488N-022		CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C77	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C78	82 5%		1469-000082	TCZ-82	22R5Q82	CM-20B-820J	CNO-482	MS-482
C79	.047 400V		P488N-047	DF-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C80	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C81	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C82	680 10%	(330mmf) †	DI-680	D6-681	1R5T68	CCS-681	JL-368	MS-368
C83	82 5%		1469-000082	TCZ-82	22R5Q82	CM-20B-820J	CNO-482	MS-482
C84	.047 400V		P488N-047	DF-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C85	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C86	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1
C87	680 10%	(330mmf) †	DI-680	D6-681	1R5T68	CCS-681	JL-368	MS-368
C88	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P1

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
# Coronado Part Number
† Alternate Value.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CORONADO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg *	½	36X411				▲ UE4042	Level, Left Channel
B	2meg *	½						Level, Right Channel
R2A	2meg †	½	36X408				♯ UE4035	Contour, Left Channel
B	2meg †	½						Contour, Right Channel
R3A	1meg	½	40X458	B-70	AD47-1meg-Z	Q11-138		Bass, Left Channel
B	1meg	½		SR-70 ♯	Not Req.	M11-137	■ UE3913	Bass, Right Channel
C	Shaft			Not Req.	FS-3	Not Req.		
R4A	100K	½	40X459	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	500K	½	40X457	B-60	AD47-500K-Z	Q11-133		Treble, Left Channel
B	500K	½		SR-60	Not Req.	M11-133	▲ UE1398	Treble, Right Channel
C	Shaft			Not Req.	FS-3	Not Req.		
R8A	400Ω	1(WW)	40X452	WN-401	A43-400	W11-202	R500L	Hum Balance Left Chann
B	Shaft			Not Req.	FKS-1/4	SK-5	Not Req.	
R7A	400Ω	1(WW)	40X452	WN-401	A43-400	W11-202	R500L	Hum Banance, Right Chann
B	Shaft			Not Req.	FKS-1/4	SK-5	Not Req.	

* Tap @ 700K
† Taps @ 750K & 1.5meg
♯ "STA-LOC" equivalent FA26DT155, RU26DT155, CS3500
▲ "STA-LOC" equivalent: FB26T75, RU26T75, CS3500
■ "STA-LOC" equivalent: FA16A, RU16A, CS-3500
▲ "STA-LOC" equivalent: FA55A, RU55A, CS-3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REMARKS
R8	33K	
R9	10K	
R10	1meg	
R11	22K	
R12	220Ω	
R13	1000Ω	
R14	33Ω	
R15	470K	
R16	470K	
R17	470K	
R18	220Ω	
R19	15K 1W	
R20	680Ω	
R21	3.3meg	
R22	12K	
R23	68K	
R24	100Ω	
R25	33Ω	
R26	39K	
R27	47K	
R28	1meg	
R29	4700Ω	
R30	6800Ω	
R31	4700Ω	
R32	330Ω	
R33	68Ω	
R34	100K	
R35	100K	
R36	2.2meg	
R37	15K	
R38	15K	
R39	100K 5%	
R40	100K 5%	

ITEM No.	RATING	REMARKS
R41	100K	
R42	1000Ω 1W	
R43	330Ω 1W	
R44	1meg	
R45	1meg	
R46	2.2meg	
R47	47K	
R48	470K	
R49	33K	
R50	180K	
R51	470K	
R52	220K	
R53	220K	
R54	82K	
R55	2.2meg	
R56	22K	
R57	22K	
R58	1meg	
R59	2.2meg	
R60	47K	
R61	1000Ω	
R62	470K	
R63	33K	
R64	180K	
R65	470K	
R66	220K	
R67	220K	
R68	82K	
R69	2.2meg	
R70	22K	
R71	22K	
R72	1000Ω	
R73	3300Ω	

ITEM No.	RATING	REMARKS
R74	3300Ω	
R75	2700Ω	
R76	470K	
R77	330K	
R78	560Ω 5%	
R79	180K	
R80	470K	
R81	82K	
R82	2200Ω	
R83	82K	
R84	100K	
R85	100Ω	
R86	100K	
R87	100Ω	IRC #PW5-130
R88	130Ω 5W	WORKMAN TV
R89	5100Ω 5%	#5W-SQ-130
R90	470K	
R91	330K	
R92	560Ω 5%	
R93	180K	
R94	470K	
R95	82K	
R96	2200Ω	
R97	82K	
R98	100K	
R99	100Ω	
R100	100K	IRC #PW5-130
R101	100Ω	WORKMAN TV
R102	130Ω 5W	#5W-SQ-130
R103	5100Ω 5%	IRC #PW5-680
R104	8200Ω 2W	WORKMAN TV
R105	680Ω 4W	#5W-SQ-680
R106	68Ω	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: CORONADO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	FM Ant (.9uh)	9A2448	BC-561	4602	RTC-8515	T855	① ① IRC Part #CLA
L2	RF Choke (3.3uh)	35A8	BC-564	9320-18	RTC-8518	T858	①
L3	FM RF	9A2445					
L4	FM Mixer	9A2446					
L5	Fil. Choke (1.5uh)	35A6	BC-562	4604	RTC-8516	T856	①
L6	FM Osc.	9A2447					
L7	RF Choke (3.3uh)	35A8	BC-564	9320-18	RTC-8518	T858	①
L8	Loopstick	9A2441					
L9	AM RF	9A2439					
L10	AM Osc	9A2438					
L11	1st FM IF	9A2440	FM-254	1463	RTC-8599	T633	
L12	Fil. Choke (1.5uh)	35A6	BC-562	4604	RTC-8516	T856	①
L13	1st AM IF	9A2443	BC-352	12-C1	RTC-8632	T607	
L14	2nd FM IF	9A2440	FM-254	1463	RTC-8599	T633	
L15	2nd AM IF	9A2443	BC-353	12-C2	RTC-8633	T608	
L16	3rd FM IF	9A2440	FM-254	1463	RTC-8599	T633	
L17	Fil. Choke (1.5uh)	35A6	BC-562	4604	RTC-8516	T856	①
L18	Discriminator	9A2442	FM-253	1464	RTC-8665	T634	

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	CORONADO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ 1.6A	610 VCT @ .180A Tap @ 270 VCT @ .040A	5V @ 3A	53X378					
	SEC. 3	SEC. 4	SEC. 5						
	5V @ 2A	6.3V @ 2.6A	6.3V @ 2.1A						
	SEC. 6								
	6.3V @ 2.1A								

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CORONADO PART No.	QUAM PART No.	
SP1	12"	PM	6-8Ω	12A562		
SP2	5"	PM	6-8Ω	12A563		
SP3	12"	PM	6-8Ω	12A562		
SP4	5"	PM	6-8Ω	12A563		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CORONADO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6200Ω CT	6-8Ω	51X201	A-3028	A-3880	22S58	S-55X	
T3	6200Ω CT	6-8Ω	51X201	A-3028	A-3880	22S58	S-55X	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	CORONADO PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1			13TB	Not Req.	26S	S1-1 * & S3-3 *	8TA4-S	N-8TAS	

MISCELLANEOUS

ITEM No.	PART NAME	CORONADO PART No.	NOTES
M2	Tuning Cap	14A235	5Gang (AM Sections: Ant. 13-332mmf, RF 12-217mmf, Osc. 10-143mmf)
M3	Switch	2A506	Selector (3 Position) AM-FM-FM AFC
M4	Switch	2A510	Function (6 Position)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10A963	Tuner
Knob	10A960-1	Preamp.
Pointer	15X286-1	
Dial Glass	58X810	
Dial Plate	25X2168-1	

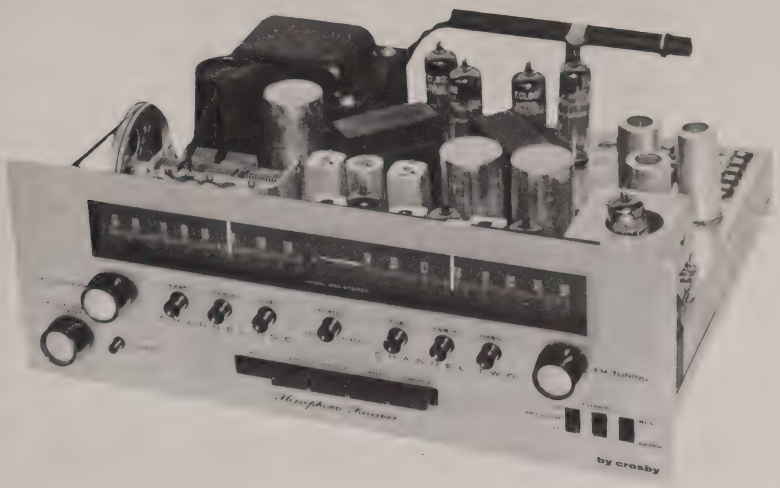
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

CROSBY MODEL 650

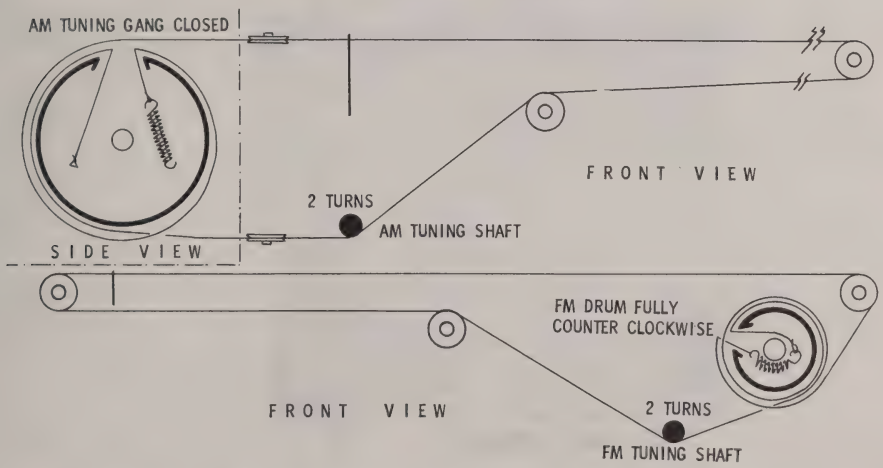
CROSBY MODEL 650



CROSBY MODEL 650

TRADE NAME	Crosby Model 650		
MANUFACTURER	Crosby Electronics, Inc., Subsidiary of Crosby-Teletronics Corp., 135 Eileen Way, Syosset, L.I., N.Y.		
TYPE SET	AC Operated 15 Tube FM-AM Receiver With Stereo Amplifier		
POWER SUPPLY	105 – 125 Volts AC, 60 Cycles	RATING	120 Watts, 1.2 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 – 1600KC	FREQ. MOD.	88 – 108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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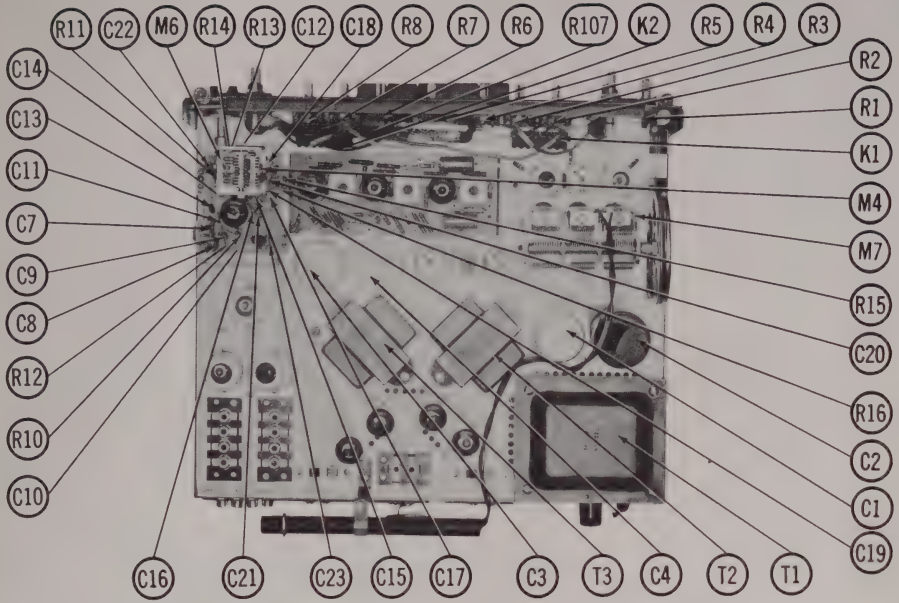
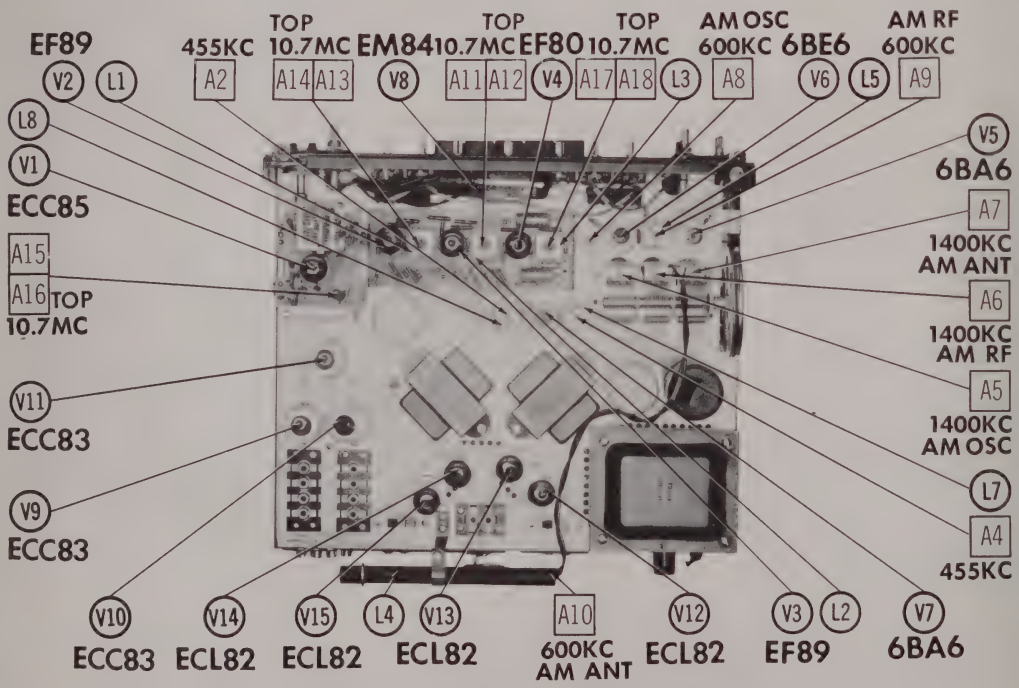
KT704

SET 549 FOLDER 8



CHASSIS — TOP VIEW



CHASSIS — TOP VIEW

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.

Suggested Alignment Tools:
- A1 thru A4, A9... GENERAL CEMENT #5097, 8727; WALSCO #2515
- A5, A6, A7..... GENERAL CEMENT #5004, 5008, 5009; WALSCO #2520
- A8..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440; WALSCO #2526, 2543, 2544, 2545
- All thru A18..... GENERAL CEMENT #8282, 8606, 8606-L, 9091; WALSCO #2526, 2541, 2542, 2543, 2544

AM ALIGNMENT – SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	High side thru .1mfd to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400% 30% AM)	(AM) Tuning gang fully open.	DC probe to point Ⓐ. Common to Chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	High side to AM antenna terminal. Low side to chassis.	1400KC	1400KC	"	A5, A6, A7	"
3.	"	600KC	600KC	"	A8, A9, A10	Adjust for maximum deflection. A10 is adjusted by moving ring along loopstick for maximum, then recement.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM—SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe thru 1meg to pin 2 (grid) of FM Limiter. Common to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum deflection.
5.	"	"	"	DC probe to point Ⓑ. Common to chassis.	A17, A18	Detune A18. Adjust A17 for maximum deflection. Adjust A18 for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE—SELECTOR IN FM POSITION

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to pin 2 (grid) of FM Limiter. Low side to chassis.	A11, A12, A13, A14, A15, A16	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A17, A18	Adjust A18 to place marker at the center of crossover lines similar to Fig. 2. Adjust A17 for maximum amplitude and straightness of cross-over lines.

FIG. 1

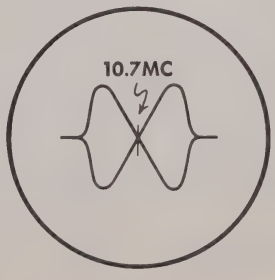
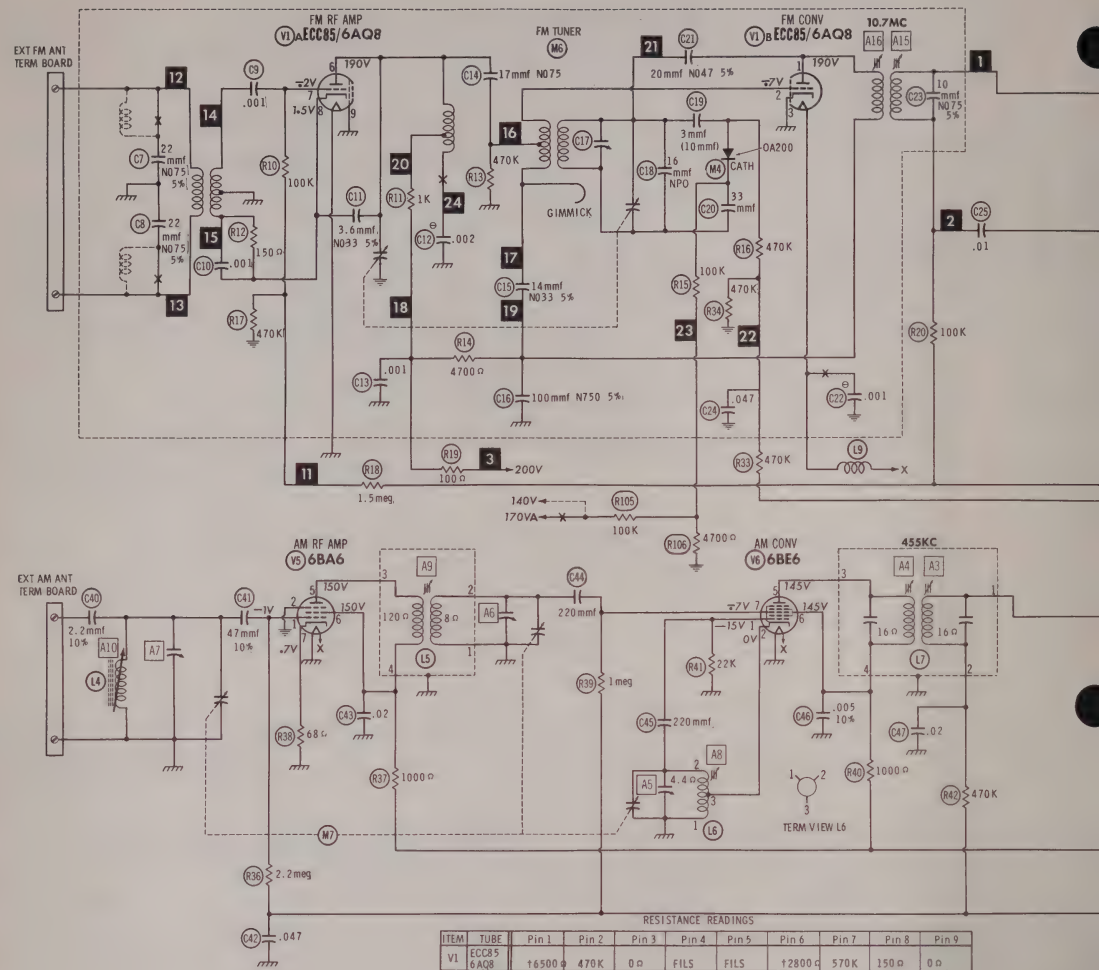


FIG. 2



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85 6AQ8	†6500Ω	470K	0Ω	FILS	FILS	†2800Ω	570K	150Ω	0Ω
V2	EF89	NC	480K	220Ω	FILS	FILS	0Ω	†2700Ω	†85K	0Ω
V3	EF89	NC	480K	220Ω	FILS	FILS	0Ω	†2700Ω	†85K	0Ω
V4	EF80	NC	47K	0Ω	FILS	FILS	0Ω	†100K	†100K	0Ω
V5	6BA6	5.7meg	0Ω	FILS	FILS	†4400Ω	†4400Ω	68Ω		
V6	6BE6	22K	.1Ω	FILS	FILS	†4400Ω	†4400Ω	4.5meg		
V7	6BA6	4meg	0Ω	FILS	FILS	†4400Ω	†4400Ω	68Ω		
V8	EM84 6FG6	2meg	NC	0Ω	FILS	FILS	†10K	†280K	NC	†280K
V9	ECC83 12AX7	†250K	47K	2200Ω	44Ω	60Ω	†250K	47K	2200Ω	NC
V10	ECC83 12AX7	†250K	470K	2700Ω	FILS	FILS	†250K	470K	2700Ω	FILS
V11	ECC83 12AX7	†160K	0Ω	1200Ω	FILS	FILS	†160K	0Ω	1200Ω	FILS
V12	ECL82	0Ω	60Ω	470K	FILS	FILS	†295Ω	†660Ω	2400Ω	†400K
V13	ECL82	†400K	60Ω	470K	FILS	FILS	†280Ω	†660Ω	100K	†110K
V14	ECL82	0Ω	60Ω	470K	FILS	FILS	†295Ω	†660Ω	2400Ω	†400K
V15	ECL82	†400K	60Ω	470K	FILS	FILS	†280Ω	†660Ω	100K	†110K

ALL MEASUREMENTS TAKEN IN "AM-FM" PSOITION UNLESS OTHERWISE INDICATED
† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

❶ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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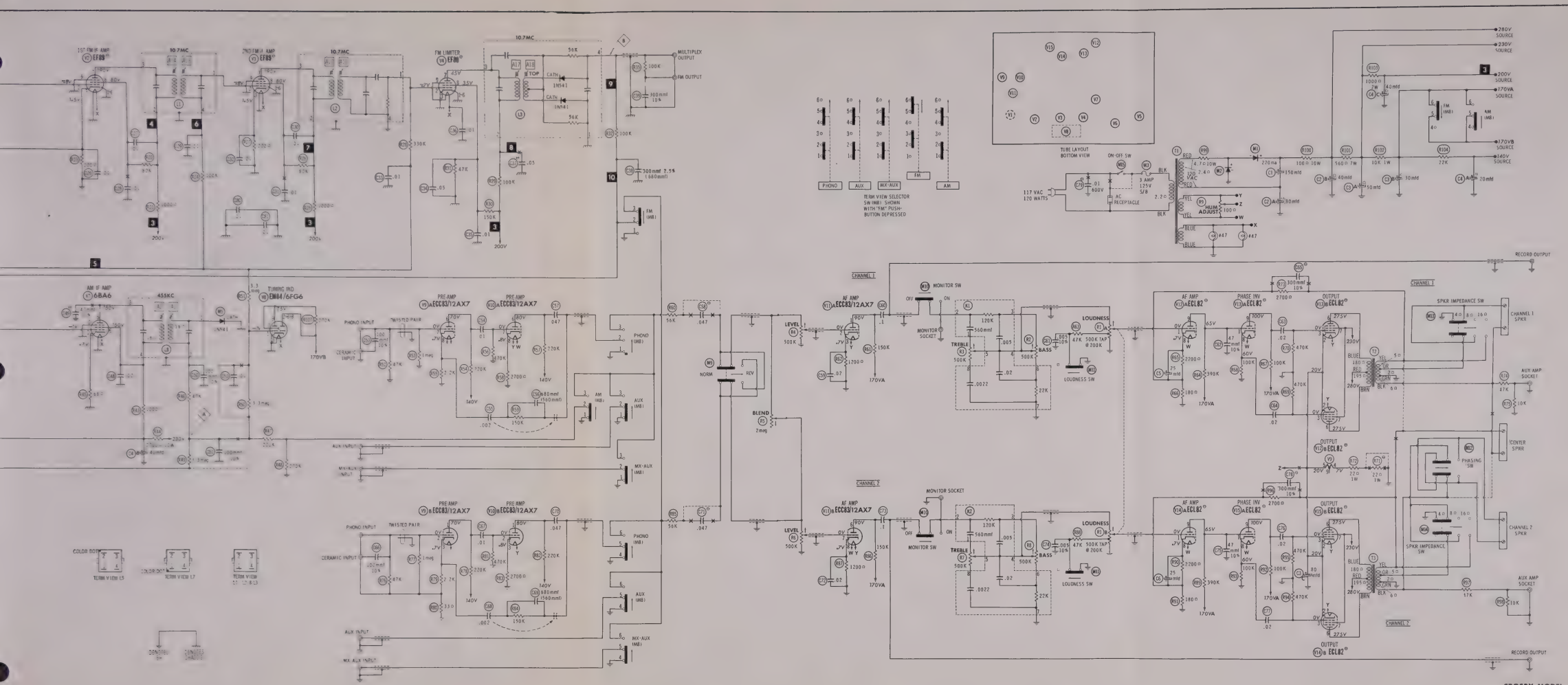
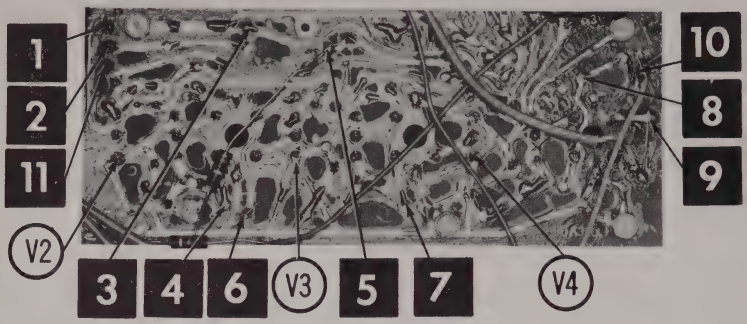
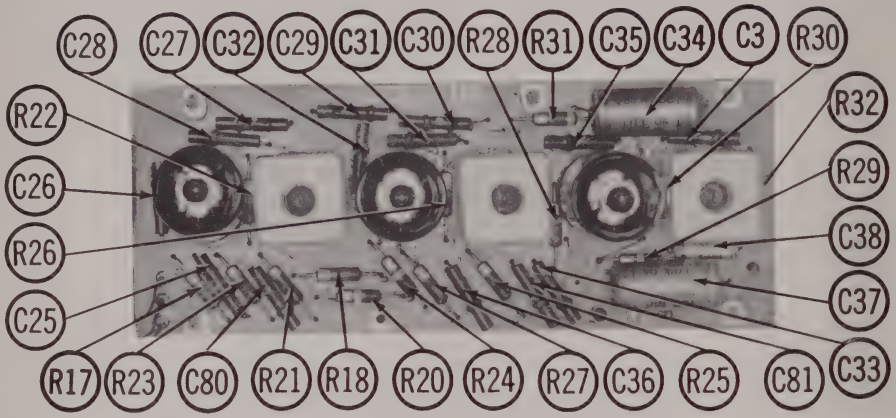

1ST FM IF AMP
2ND FM IF AMP
10.7MC
FM LIMITER
MULTIPLEX OUTPUT
FM OUTPUT
AM IF AMP
455KC
TUNING IND
PRE-AMP
PHONO INPUT
CERAMIC INPUT
TWISTED PAIR
AUX INPUT
MX-AUX INPUT
PHONO
AUX
MX-AUX
AM
FM
NORM
REV
BLEND
LEVEL
AF AMP
MONITOR SW
MONITOR SOCKET
TREBLE
BASS
LOUDNESS
LOUDNESS SW
CHANNEL 1
CHANNEL 2
PHASE INV
OUTPUT
SPKR IMPEDANCE SW
CHANNEL 1 SPKR
CHANNEL 2 SPKR
CENTER SPKR
PHASING SW
AUX AMP SOCKET
RECORD OUTPUT
TUBE LAYOUT BOTTOM VIEW
ON-OFF SW
AC RECEPTACLE
117 VAC 170 WATTS
HUM ADJUST
TERM VIEW SELECTOR SW (MB) SHOWN WITH "FM" PUSH-BUTTON DEPRESSED
280V SOURCE
230V SOURCE
200V SOURCE
170VA SOURCE
170VB SOURCE
140V SOURCE
CROSBY MODEL 650



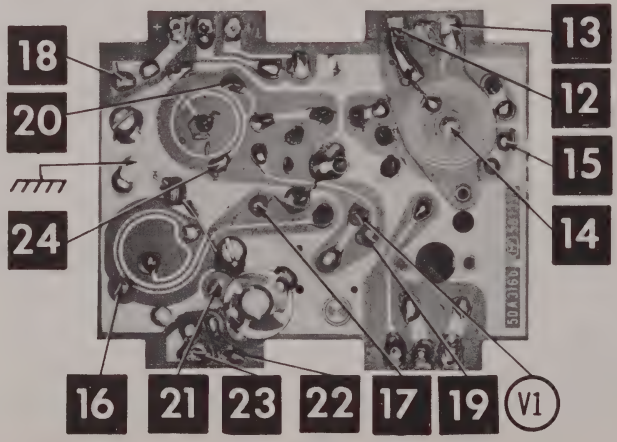
A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

FM IF PRINTED BOARD



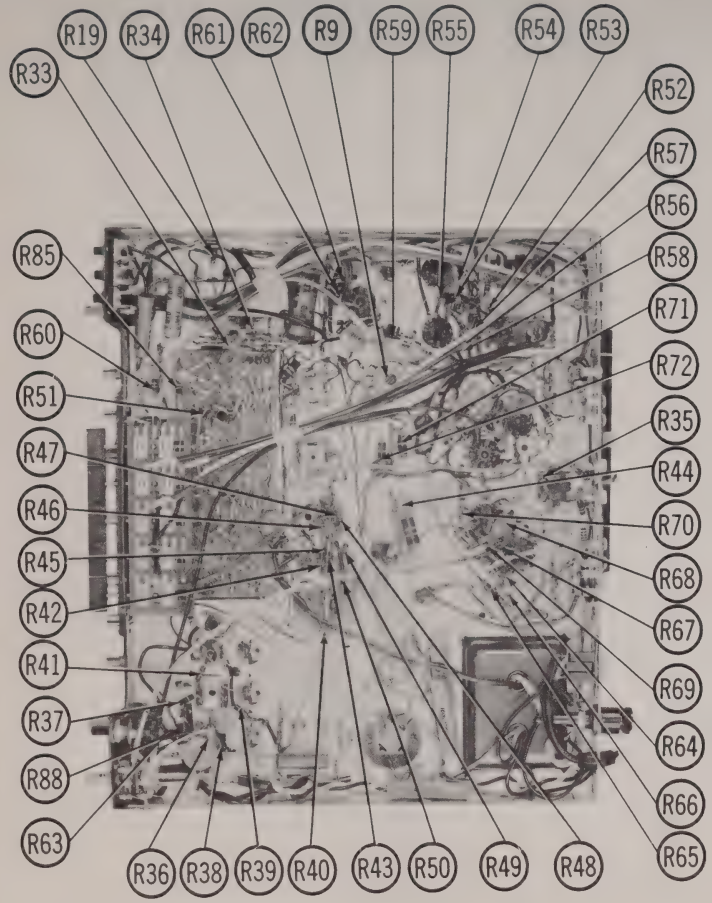
FM IF PRINTED BOARD



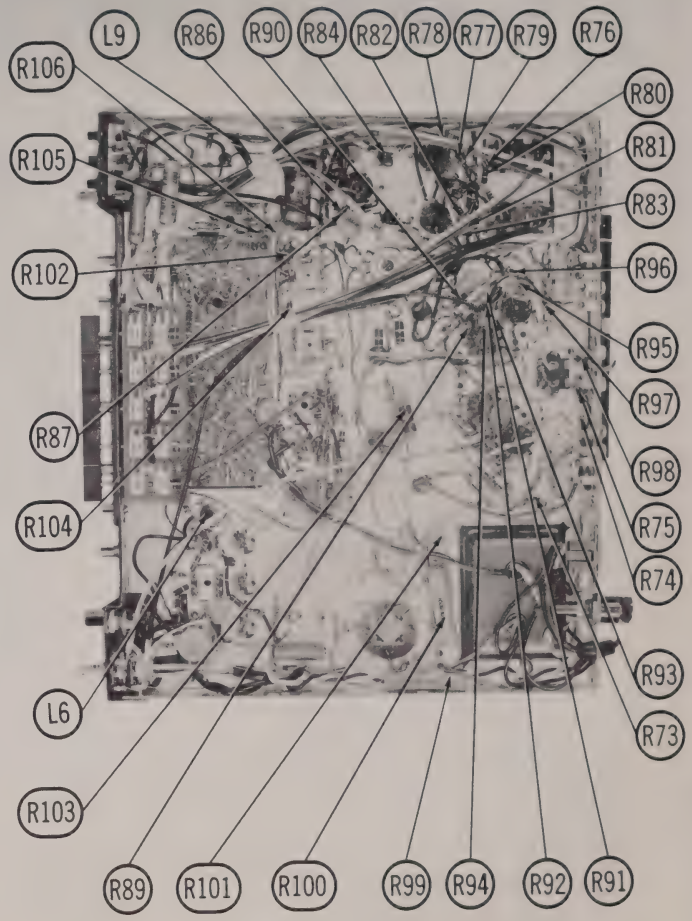
A Howard W. Sams CIRCUITRACE® Photo

FM RF SUBCHASSIS

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



CHASSIS BOTTOM VIEW -- RESISTOR IDENT.



CHASSIS BOTTOM VIEW
-- RESISTOR & INDUCTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	ECC85/6AQ8
V2	1st FM IF Amp.	EF89 (6DA6) *
V3	2nd FM IF Amp.	EF89 (6DA6)*
V4	FM Limiter	EF80 (6BX6) *
V5	AM RF Amp.	6BA6
V6	AM Converter	6BE6
V7	AM IF Amp.	6BA6
V8	Tuning Indicator	EM84/6FG6
V9	Channel 1 Preamp. - Channel 2 Preamp.	ECC83/12AX7
V10	Channel 1 Preamp. - Channel 2 Preamp.	ECC83/12AX7
V11	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83/12AX7
V12	Channel 1 AF Amp. - Channel 1 Output	ECL82 (6BM8) *
V13	Channel 1 Phase Inv. - Channel 1 Output	ECL82 (6BM8) *
V14	Channel 2 AF Amp. - Channel 2 Output	ECL82 (6BM8) *
V15	Channel 2 Phase Inv. - Channel 2 Output	ECL82 (6BM8) *

* Alternate

ELECTROLYTIC CAPACITORS

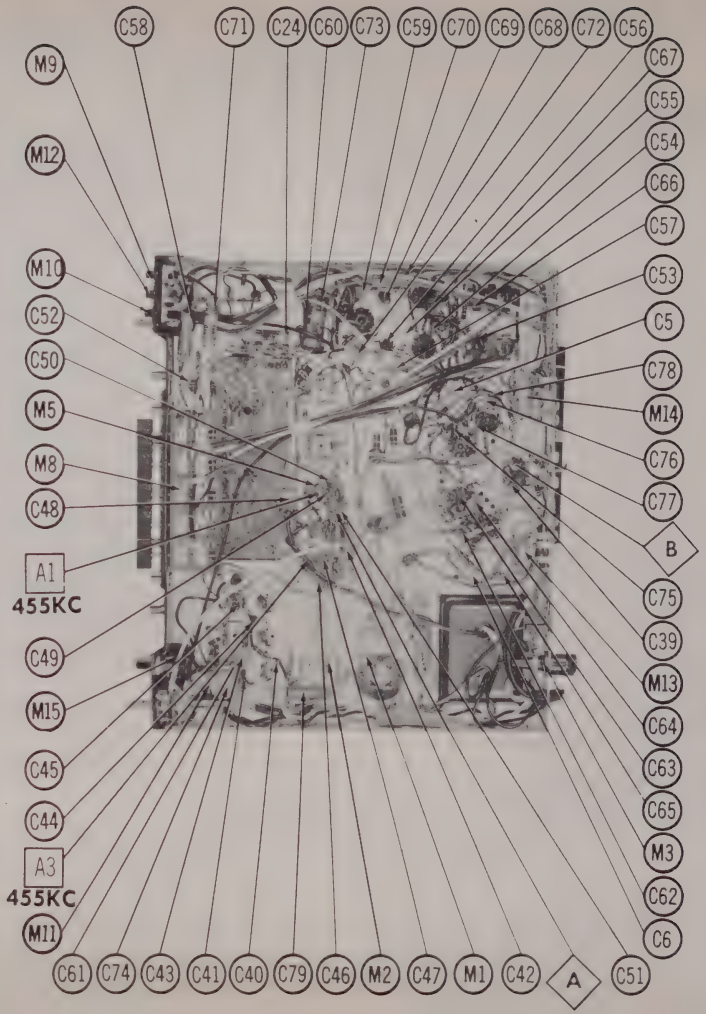
ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CROSBY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	150	250		AFH1-31-75	XA0315	WP131.5	TMS-1480	TVL-1540	
C2A	▲80	200		AFH2-99-75		FP250	TMS-1650	TVL-2807	
B	■40	450					TD-40-450		
C3A	■50	350		AFH4-114-50	B0715	FP250		TVLS-3711.1*	
B	▲30	450			BR3045	TC79			
C	▲80	50							
C4A	▲20	300		AFH4-02	B0260	FP327.89	TMD-2315	TVL-3583	
B	▲40	300			BR2035		TD-20-350		
C	■40	300							
C5	25	3		PRS1260	BBR25-3	TC26	TD-25-25	TVA-1205	
C6	25	3		PRS1260	BBR25-3	TC26	TD-25-25	TVA-1205	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	22 N075 5%					*		
C8	22 N075 5%					*		
C9	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C11	3.6 N033 5%					*		
C12	.002	Note 1	SI 2000	D6-202	BYA10D2	CCD-202	B-220	5HK-D20
C13	.001		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C14	17 N075					*		
C15	14 N033 5%					*		
C16	100 N750 5%			TCN-100	C10T1U		CN7-310	10TCU-T10
C17								
C18	16 NPO		NPO-SI 15	TCZ-15	C10Q15C	CCTO-150	CNO-415	10TCC-Q15
C19	3	(10) †	NPO-SI 3.0	TCZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C20	33		SI 33	D6-330	L10Q33	CCD-330	GP433	10TS-Q33
C21	20 N047 5%					*		
C22	.001	Note 1	BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C23	10 N075 5%					*		
C24	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C25	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C26	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C27	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	.01	Note 1	SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C29	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C30	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C31	.01	Note 1	SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C32	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C33	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	4TM-S50
C35	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C37	.05 200V	Note 1	P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	4TM-S50

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C38	300 2.5%	(680) †				VCM-20-301G	MCE241	
C39	300 10%			D6-301	L10T3	CCD-301	GP330	10TS-T30
C40	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C41	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C42	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C43	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C44	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C45	220		SI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C46	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C47	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C48	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C49	47 10%	Note 1	NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C50	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C51	100 10%		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C52	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C53	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C54	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C55	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C56	680	(560) †	SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68
C57	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C58	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C59	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C60	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C61	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C62	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C63	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C64	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C65	300 10%	Note 1		D6-301	L10T3	CCD-301	GP330	10TS-T30
C66	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C67	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C68	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C69	680	(560) †	SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68
C70	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C71	.047 200V	Note 1	P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	4TM-S47
C72	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C73	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C74	.005 10%		DI-5000		PM6D5	CCD-502	JL-250	10TS-D50
C75	47 10%		NPO-SI 47	D6-470	L10Q47	CCD-470	GP447	10TS-Q47
C76	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C77	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C78	300 10%	Note 1		D6-301	L10T3	CCD-301	GP330	10TS-T30
C79	.01 600V	Note 1	P688N- 01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C80	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C81	.01		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10

Note 1. Not used in some versions.
† Alternate Value.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROSBY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	500K	½	RV-5059					Loudness, Channel 1
	200K Tap							
B	500K	½						Loudness, Channel 2
	200K Tap							
C	Switch							
R2A	500K	½	RV-5060	B-60	A47-500K-Z	Q13-133	U48	Bass, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	500K	½	RV-5060	B-60	A47-500K-Z	Q13-133	U48	Treble, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	500K	½	RV-5061	B-59	A47-500K-S	Q11-133	U50	Level, Channel 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5A	2meg	½	RV-5062	B-76	A47-2meg-Z	Q13-139	U55	Blend
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R6A	500K	½	RV-5061	B-59	A47-500K-S	Q11-133	U50	Level, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CROSBY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R7A	500K	½	RV-5060	B-60	A47-500K-Z	Q13-133	U48	Treble, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R8A	500K	½	RV-5060	B-60	A47-500K-Z	Q13-133	U48	Bass, Channel 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R9A	100Ω	½	RW-1011	AB-1		B11-084	U1	Hum Adjust
B	Shaft			AK-1		SK2	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R10	100K				R59	150K			
R11	1000Ω				R60	56K			
R12	150Ω				R61	150K			
R13	470K				R62	1200Ω			
R14	4700Ω				R63	47K			
R15	100K				R64	390K			
R16	470K				R65	2200Ω			
R17	470K				R66	180Ω			
R18	1.5meg				R67	100K			
R19	100Ω				R68	100K			
R20	100K				R69	470K			
R21	1000Ω				R70	470K			
R22	82K				R71	22Ω 1W			Note 1
R23	220Ω				R72	22Ω 1W			
R24	100K				R73	2700Ω			
R25	1000Ω				R74	47K			
R26	82K				R75	10K			
R27	220Ω				R76	47K			
R28	330K				R77	1meg			
R29	100K				R78	220K			
R30	150K				R79	2200Ω			
R31	47K				R80	33Ω			
R32	100K				R81	470K			
R33	470K				R82	220K			
R34	470K				R83	2700Ω			
R35	100K				R84	150K			
R36	2.2meg				R85	56K			
R37	1000Ω				R86	150K			
R38	68Ω				R87	1200Ω			
R39	1meg				R88	47K			
R40	1000Ω				R89	390K			
R41	22K				R90	2200Ω			
R42	470K				R91	180Ω			
R43	1000Ω				R92	100K			
R44	2700Ω 10W				R93	100K			
R45	68Ω				R94	470K			
R46	47K				R95	470K			
R47	220K				R96	2700Ω			
R48	270K				R97	47K			
R49	3.3meg				R98	10K			
R50	3.3meg				R99	4.7Ω 10W			
R51	3.3meg				R100	100Ω 10W			
R52	47K				R101	560Ω 7W			
R53	1meg				R102	10K 1W			
R54	220K				R103	1000Ω 2W			
R55	2200Ω				R104	22K			
R56	470K				R105	100K			
R57	220K				R106	4700Ω			
R58	2700Ω				R107	270K			

Note 1. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	CROSBY PART No.	REPLACEMENT DATA
K1	Tone Comp.	560mmf, .0022mfd, 005mfd, .02mfd, 22K, 120K	SK-1208-180	
K2	Tone Comp.	560mmf, .0022mfd, .005mfd, .02mfd, 22K, 120K	SK-1208-180	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		CROSBY PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	2nd FM IF	HT-4					
L2	3rd FM IF	HT-14					
L3	Discriminator	HT-27					
L4	Loopstick	LA-1005	BC-419	705-A		T532	
L5	AM RF	TR-1001					
L6	AM Osc.	LO-1002	BC-393	69-OSC	RTC-8646	T512	
L7	1st AM IF	TI-1003	BC-352	12-C1	RTC-8632	T607	
L8	2nd AM IF	TI-1003	BC-353	12-C2	RTC-8633	T608	
L9	Fil. Choke (1uh)	LC-1001	BC-561	4602	RTC-8515	T855	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	CROSBY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ 1.2A	120V @ .720A AC	6.3V @ 2.7A	TP-1020					
	SEC. 3	SEC. 4	SEC. 5						
	6.3V @ 3.6A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CROSBY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω CT	16Ω Tap @ 8Ω, 4Ω	TO-1006					
T3	4500Ω CT	16Ω Tap @ 8Ω, 4Ω	TO-1006					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	CROSBY PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.220A		1N1763	40H	SR-500	
M2	.220A		1N1763	40H	SR-500	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			CROSBY PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	3A 125V S/B	FS-3000		313003 (3AG 3A 125V S/B)	342001	MDX 3	HKP

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROSBY PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	OA200*					* Part of FM Tuner
M5	1N541					AM Detector

MISCELLANEOUS

ITEM No.	PART NAME	CROSBY PART No.	NOTES
M6	FM Tuner		Complete
M7	Tuning Cap.	CV-1001-1	AM, 3 Gang (Ant. 11-488mmf, RF 11-360mmf, Osc. 15-146mmf)
M8	Switch	SF1027	Function (Pushbutton Type)
M9	Switch	SS-1006-1	Normal-Reverse (DPDT Slide Type)
M10	Switch		Monitor Off-On (DPDT Slide Type)
M11	Switch		Loudness (DPDT Slide Type) Actuated by pulling volume control shaft.
M12	Switch	SS-1006-1	Phasing (DPDT Slide Type)
M13	Switch	SS-1009	Speaker Impedance (4PTT, Slide Type)
M14	Switch	SS-1009	Speaker Impedance (4PTT, Slide Type)
M15	Switch	ST-1001	Power Off-On (Pushbutton Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder

FANON MODEL 3525

FANON MODEL 3525

FANON MODEL 3525

TRADE NAME	Fanon Model 3525
MANUFACTURER	Fanon Electronic Sales Corp., A Div. of Fanon Electronic Industries, Inc., 439 Frelinghuysen Ave., Newark 12, N. J.
TYPE SET	Battery Operated Transistorized Mobile Audio Amplifier
POWER SUPPLY	12 Volt Storage Battery RATING 1 Amp. @12.6 Volts DC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KX759

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PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N406	Mic. Preamp.	2N406	2N362	2N406	PNP
X2	2N406	AF Amplifier	2N406	2N362	2N406	PNP
X3	2N408	AF Amplifier	2N406	2N362	2N406	PNP
X4	3577	Driver				PNP
X5	2N669	Output				PNP
X6	2N669	Output				PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	FANON PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	2000	20		AFH1-14-50 PRS1290				TVLS-1250 *	
C2	100	15		PRS1200	BBR100-15	TC2501	TD-100-15	TVA-1160	
C3A	25	25		PTT82	NLW25-25	TT25X25	MLV25-25	TE-1207	
B	25	25		PTT82	NLW25-25	TT25X25	MLV25-25	TE-1207	
C4	50	25		PRS1265	NLW50-25	TC29	TD-50-25	TVA-1206	
C5	10	25		PRS1250	NLW10-25	TC22	MLV10-25	TE-1204	
C6	40	10		PTT44	NLW40-10	TT15X40	MLV40-12	TE-1119	
C7	10	25		PRS1250	NLW10-25	TC22	MLV10-25	TE-1204	
C8	100	15		PRS1200	BBR100-15	TC2501	TD-100-15	TVA-1160	
C9	40	10		PTT44	NLW40-10	TT15X40	MLV40-12	TE-1119	
C10	10	25		PRS1250	NLW10-25	TC22	MLV10-25	TE-1204	
C11	40	10		PTT44	NLW40-10	TT15X40	MLV40-12	TE-1119	
C12	100	15		PRS1200	BBR100-15	TC2501	TD-100-15	TVA-1160	
C13	100	15		PRS1200	BBR100-15	TC2501	TD-100-15	TVA-1160	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C14	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C15	.25 200V		P288N-25		CUB2P25	2DP-4-254	GEM-2025	2TM-P25

CONTROLS

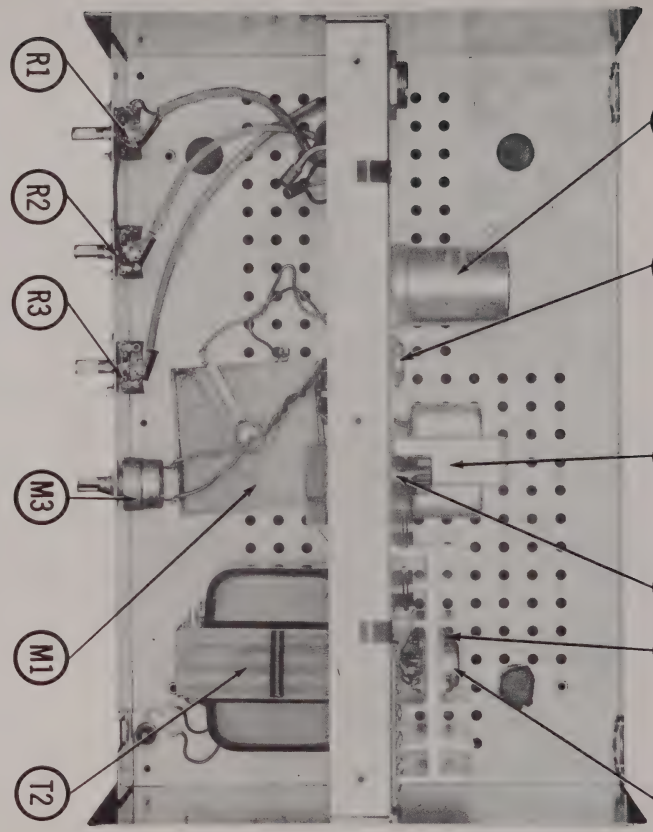
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	FANON PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	15K	½	203-05	B-20	A47-15K-W		U21	Mic.
B	Shaft			Not Req.	KSS-3		Not Req.	
R2A	15K	½	203-05	B-20	A47-15K-W		U21	Phono-Radio
B	Shaft			Not Req.	KSS-3		Not Req.	
R3A	25K		203-12	B-25	A47-25K-W	Q13-120	U28A	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	2200Ω 5%				R11	5600Ω			
R5	22K 5%				R12	6800Ω			
R6	1000Ω				R13	330Ω			
R7	6800Ω				R14	68K			
R8	330K				R15	100Ω			
R9	75K 5%				R16	1000Ω			
R10	1000Ω				R17	330Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R18	2200Ω 5%				R23	.33Ω 2W			
R19	1.5Ω 3W	PW3-1.5	3W-SQ-1.5		R24	27K			
R20	75Ω 5W	PW5-75	5W-SQ-75		R25	100Ω			
R21	.33Ω 2W				R26	220Ω			
R22	75Ω 5W	PW5-75	5W-SQ-75		R27	1500Ω			

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FANON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	256-02		A-4752			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	FANON PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	15Ω CT	16Ω Tap ② 8Ω, 4Ω	252-20					

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	FANON PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	1A	290-07		5N33-1H1-E5		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			FANON PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	5A ① 125V S/B			313005 (3AG 5A 125V)	342001	MDX 5	HKP

① Some versions may use 4A in this application.

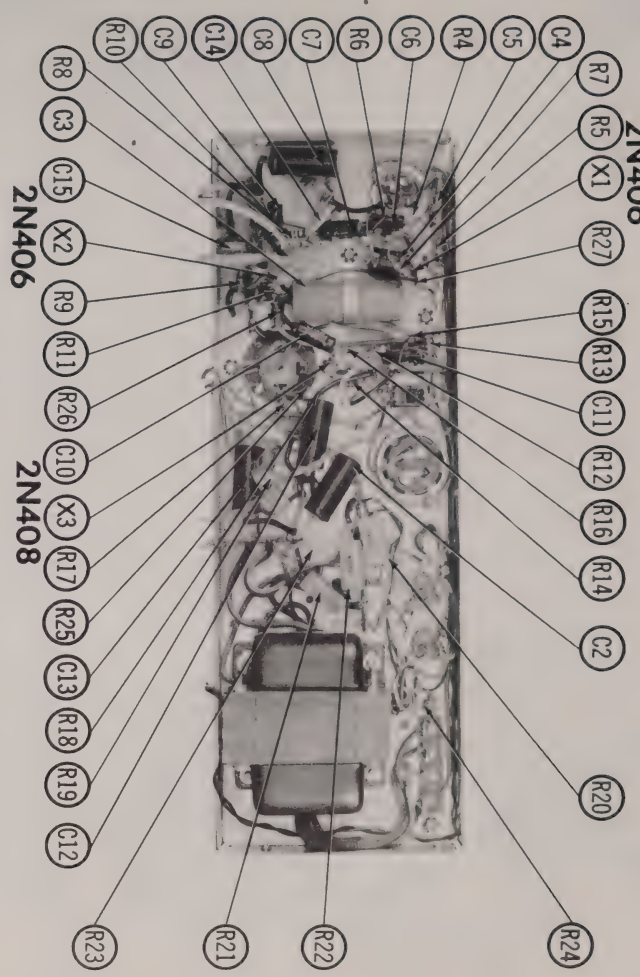
MISCELLANEOUS

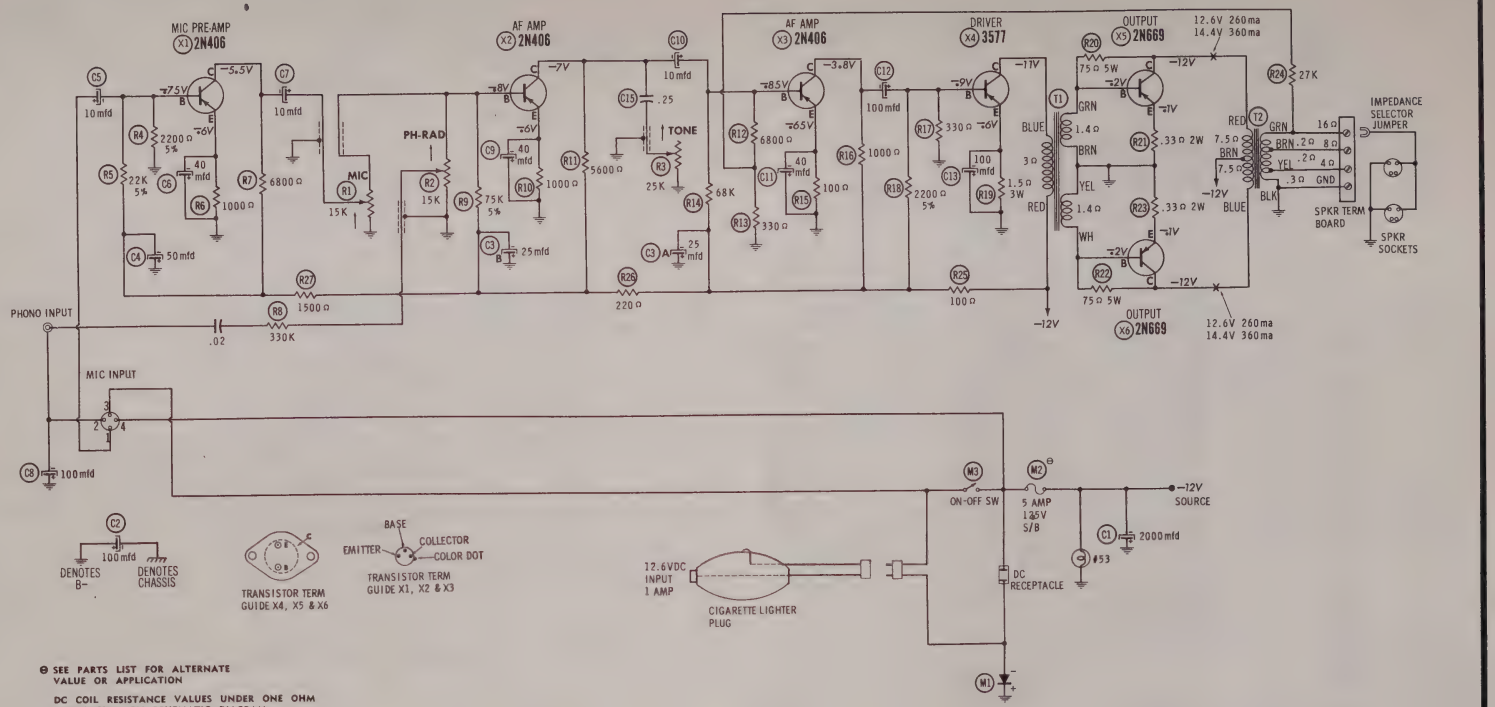
ITEM No.	PART NAME	FANON PART No.	NOTES
M3	Switch	211-09	Power Off-On

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8534 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

CHASSIS—BOTTOM VIEW





⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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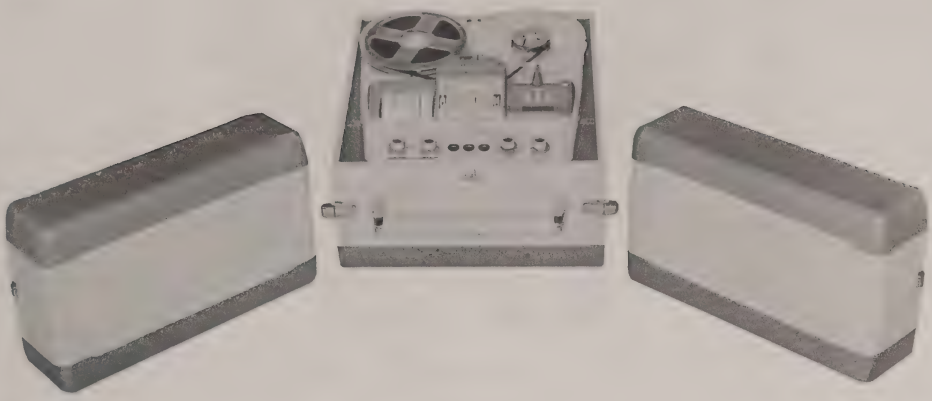
FANON MODEL 3525

PHOTOFACT® Folder

GRUNDIG MAJESTIC MODELS
TK60, TK60U, TM60, TM60U

GRUNDIG MAJESTIC MODELS
TK60, TK60U, TM60, TM60U



GRUNDIG MAJESTIC MODELS
TK60, TK60U, TM60, TM60U

GENERAL INFORMATION

The Grundig Models TK60/U and TM60/U are two-speed tape recorders with pushbutton controls.

Monaural and Stereo recordings can be recorded, and played back, from a corresponding sound source, such as a radio, TV, stereo record player, or microphone.

Model TK60/U is a dual-track recorder when recording Monaural recordings, doubling the recording and playback time. On Stereo, both tracks are used simultaneously.

The maximum diameter tape reels that can be used are 7-inch. Using both tracks on a 7-inch reel at 3 3/4 ips, the recording and playback time is four hours for monaural and two hours for stereo. Using both tracks on a 7-inch reel at 7 1/2 ips, the recording and playback time is two hours for monaural and one hour for stereo.

For playing back recorded material on the TM60/U, the output must be connected to separate power amplifiers and speakers.

This recorder is to be connected to a 117V, 60 cycle, AC power source unless otherwise specified.

Supplied By:

Majestic International Sales
743 N. LaSalle Street,
Chicago 10, Illinois

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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CQ463

SET 549 FOLDER 10

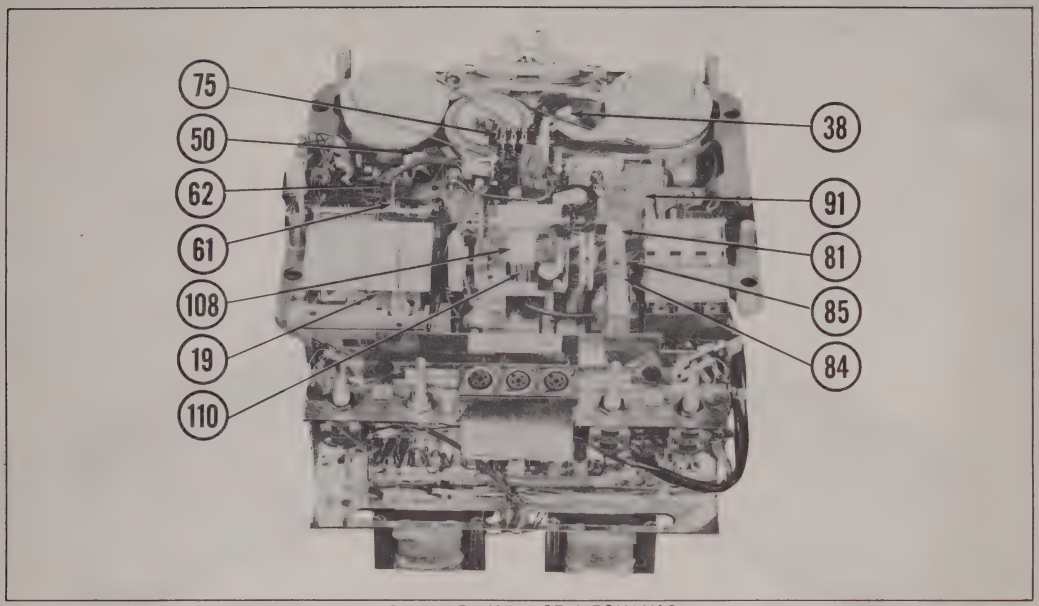


FIG.1 TOP VIEW OF MECHANISM.

PREPARING FOR OPERATION

1. Place the recorder on a flat surface and where plenty of ventilation can circulate through the screen in the bottom of the cabinet.
2. Remove the two speakers and place in operating position. (TK60/U)
3. Remove the lid from the cabinet. (TK60/U)
4. Plug the AC cord into an outlet of proper power rating.

FUNCTION OF CONTROLS

On-Off-Speed Selector

In the center position the recorder is off. When turned to the left, the recorder is on and in the 7 1/2 ips position. When turned to the right from center position, the recorder is on and in the 3 3/4 ips position.

Mono/Stereo Indicator

When the recorder is on, one of the lights at the rear edge between the tape reels will be illuminated. If the letter "M" is illuminated, the recorder is in monaural position. If the letter "S" is illuminated, the recorder is in the stereo position.

Input Selector

These selectors operate in record position only.

The selector on the left is used for phonograph recordings.

The center selector is for radio recording.

The right selector is for microphone recording.

To select one of the inputs, rotate the disc backward until a white field is shown. The red field indicates the off position.

Mono/Stereo Switch

Turn this switch to "M" for monaural recordings and to "S" for stereo recordings.

Recording Erase Cut-Out (Trick) Button

To make a recording, depress this button and hold until the "Start Button" is depressed.

For trick recording, turn this button first and then depress. (See page 4, "Erase Cut-Out Button").

Recording Level

Adjust this control so the recording level indicator flutters freely but the two halves do not overlap.

Start Button

When this button is depressed, the tape is set in motion for playback or record after the Recording/Erase Cut-out (Trick) Button has been depressed.

Temporary Stop

By depressing this button, the movement of the tape will be stopped but the mode of operation will not be affected. It can be locked in the depressed position

by moving it backwards.

Stop

Depressing this button releases any other push-button that is depressed.

Fast Rewind

This control will rewind the tape from the take-up reel onto the supply reel at a fast speed.

Fast Forward

This control advances the tape onto the supply reel at a fast speed.

Monitor Volume (TK60/U)

This serves as a monitor volume control while recording and as a volume control during playback.

Stereo Balance (TK60/U)

This is used to balance the left and right channels to the prevailing conditions.

OPERATING INSTRUCTIONS

Threading the Tape

1. Place a full reel of tape on the left hand spindle.
2. Place an empty reel on the right hand spindle.
3. Unwind about 12 inches of tape and hold a section taut and drop it into the slot.
4. Place the free end of the tape into the slot of the right hand reel and turn the reel counterclockwise a few complete turns to fasten the tape to the reel and to take up all slack between reels.

Radio Recording

1. Place the microphone 6 to 12 inches in front of the loudspeaker of the radio.
2. Turn the recorder on and to the desired speed.
3. Depress the Temporary-Stop button.
4. Depress the center input selector.
5. Depress the Record button and hold down until the Start button is depressed.
6. Adjust the Recording Level control, while feeding a sound source into the recorder, until the two halves of the indicator flutter freely.
7. Do not adjust so the two halves of the indicator will overlap or touch.
8. Tune in the desired radio program and adjust the radio volume control to a desired listening level.
9. Release the Temporary-Stop button.

Microphone Recording-Monaural

1. Adjust the Mono-Stereo switch so the "M" is illuminated in the Mono-Stereo indicator.
2. Plug the microphone into microphone socket 1.
3. Depress the right input button until the white field is visible.
4. Depress the Record button and adjust the Recording Level control until the two halves of the indicator flutter freely.
5. To start the recording, depress the Record button and hold down until the Start button is depressed.
6. When the recording is finished, depress the Stop button.

Microphone Recording-Stereo

1. Adjust the Mono-Stereo switch so the "S" is illuminated in Mono-Stereo indicator.
2. When two microphones are used, plug one into microphone socket I and the other into microphone socket II. When a stereo microphone is used, plug it into stereo microphone socket marked I + II.
3. Depress the right input button until the white field is visible.
4. Depress the Record button and adjust the Recording Level control until the two halves of the indicator flutter freely.
5. To start the recording, depress the Record button and hold down until the start button is depressed.
6. When the recording is finished, depress the Stop button.

Phonograph Recording

1. Connect the record player pick-up leads to the yellow and black banana plugs of connection lead 233.
2. Plug the connection lead into the phonograph socket on the rear of the recorder.
3. Depress the left input selector.
4. Adjust the recording level by playing a portion of a record.
5. After the recording level is adjusted, place the pick-up arm back to the beginning of the record.

Monaural Playback

1. Thread the tape, see "Threading the Tape".
2. Plug the speakers into their sockets.

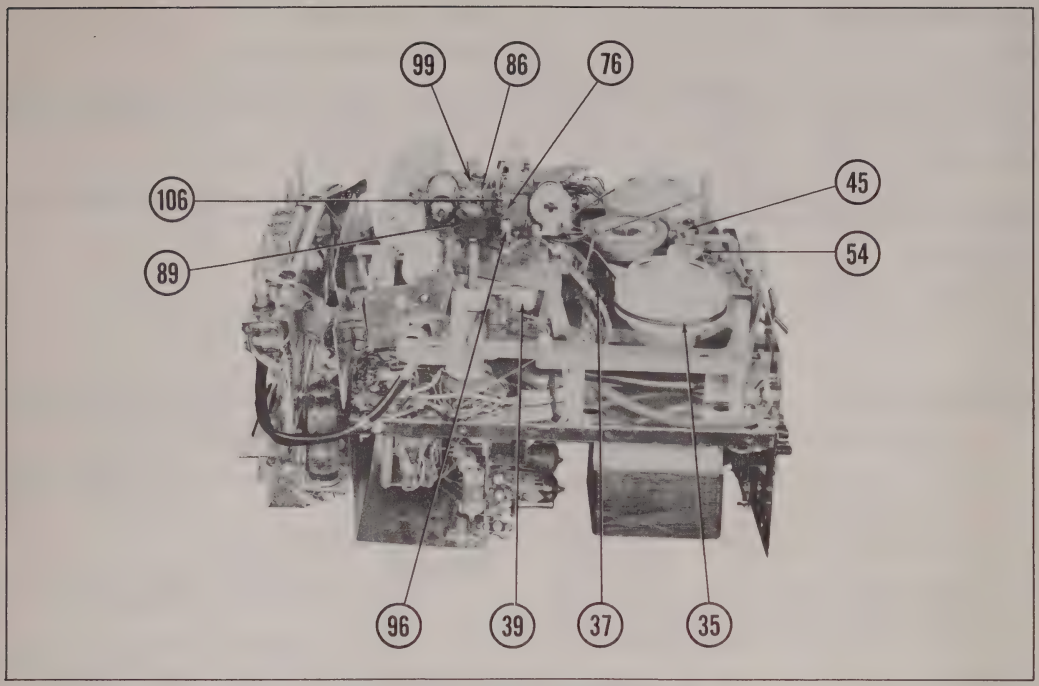


FIG.2 LEFT SIDE OF MECHANISM

3. Depress the Start button to set the tape into motion.

4. Adjust the Volume and Tone controls to the desired listening level.

5. To play the second track, reverse the reels and proceed as described above.

Stereo Playback

1. Turn the Mono/Stereo switch to the Stereo position.

2. Thread the tape, see "Threading the Tape".

3. Plug the speakers into their sockets and place the speakers in a position where the best sound is obtained.

4. Depress the Start button.

5. Adjust the Volume and Tone controls to a normal level.

6. Adjust the Stereo Balance control so the volume level in the left and right channels is the same.

Erase Cut-Out Button (Trick Button)

NOTE: This control is used to blend sound effects onto recorded tape in Monaural operation only.

A. To blend in voice or special sound effects onto previous recordings, proceed as follows:

1. When the desired spot is reached while playing back a recording, depress the temporary stop button.

2. Turn and depress the "Trick Button".

3. Hold the "Trick Button" down and set the recording level.

4. Continue holding the "Trick Button" down and release the Temporary-Stop button.

5. Release the "Trick Button" after the blending in is completed.

B. To blend in voice or special sound effects when films are set to music, proceed as follows:

NOTE: Neither the recorder nor projector must be stopped during this procedure.

1. A synchronizing device must be used to automatically start the projector when the tape recorder is turned on. A prerecorded tape should be used.

2. Make a test recording to set the recording level as described under "Microphone Recording — Monaural".

3. Depress the Start button.

4. When a blend-in is desired, turn and depress the Trick Button and release when finished.

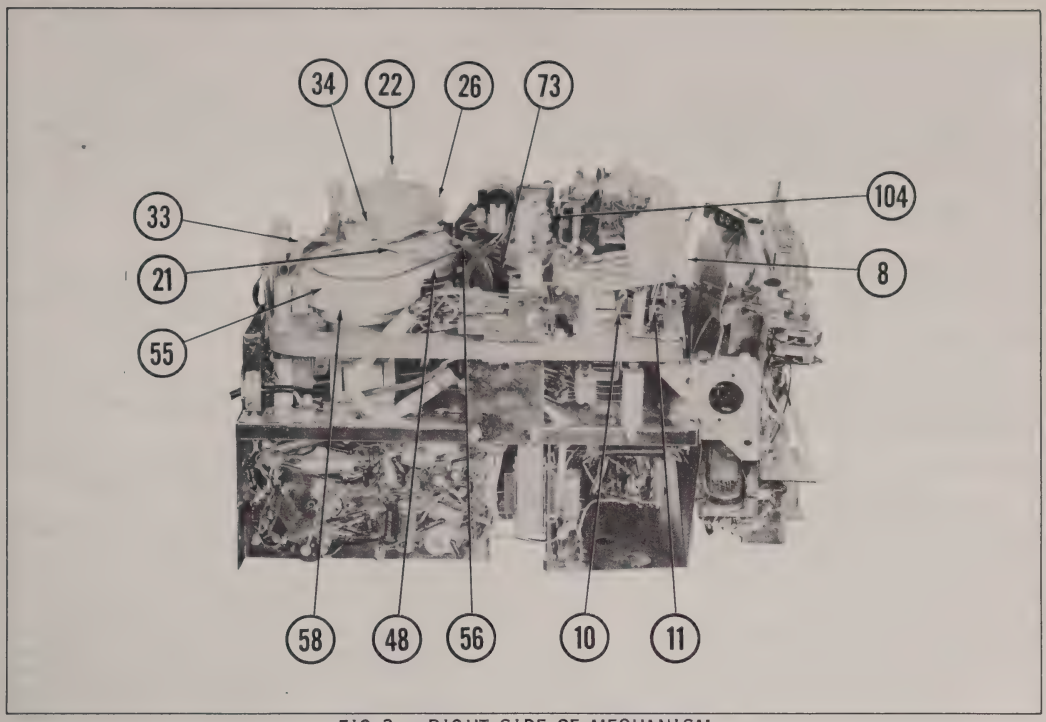


FIG.3 RIGHT SIDE OF MECHANISM

Erasing a Tape

When in the record position, any previous recording is automatically erased before a new one is put on the tape. If it is desired to erase a tape without recording new material, depress the Erase Cut-Out Button (Trick Button) and depress the Start Button. Turn the Volume control to minimum.

Editing the Tape

NOTE: It is impossible to edit one track of recorded material without affecting the other. Tapes to be edited should be limited to one track.

1. Tape may be edited by cutting out unwanted portions, or by joining selections into another sequence. Announcements can be inserted between selections, etc. Unused tape can be spliced for reuse.
2. For best results, cut tape at a slight diagonal, butt ends together and fasten on the glossy side with splicing tape. Trim off any excessive width.

Fast Rewind

To rewind the tape at end of reel or to a desired section, depress the Fast Rewind button and when the desired section is reached, depress the Stop button.

Fast Forward

To advance the tape at a rapid speed to a desired section, depress the Fast Forward button, and when the desired section is reached, depress the Stop button.

DISASSEMBLY

To Remove Recorder from the Case

1. Remove the amplifier control knobs.
2. Remove the front escutcheon by lifting up.
3. Remove the four screws holding the top deck assembly (4) and remove top deck assembly.
4. Unplug the speaker leads.
5. Remove the four hex nuts holding the recorder to the case.
6. Remove the four rubber grommets.
7. Lift recorder straight up to remove from case.
8. To reassemble, reverse the foregoing procedure.

Pressure Roller

Loosen screw (80) and turn the hex eccentric disc (81) to the left or right and tighten screw (80). This adjustment may have to be made several times to obtain the correct pressure.

Rewind Idler

Loosen the locking nut and screw on the rewind lever assembly (62) and adjust eccentric (61) so more pressure is applied to the tension spring (67).

Record Head

Thread a good prerecorded tape onto the recorder. Adjust screw (106A) until the sound is at its loudest point and no crosstalk between tracks.

Erase Head

Loosen the two mounting screws and slide the erase head back and forth until it makes good contact with the tape. Loosen the screw on top and slide the head up or down until the top of the tape is parallel to the top of the head.

AMPLIFICATION TEST AND ADJUSTMENT

First check the setting of the record indicator and the amplifier for symmetry by applying a strong 1000 cycle signal consecutively to each channel as shown in Fig. 3 on page 14.

NOTE: During this test, the "PLATTE" or "PHONO" push-button should be pushed in, for TM models only.

Adjust the Signal input level to produce 16 millivolts output from channel 1.

Adjust R13 so that the light bars of the tuning indicator almost touch.

Adjust R12 to produce 16 millivolts output from channel 2.

The Amplifier symmetry (equal output readings from each channel of 16 millivolts) may be obtained by adjusting R6.

BIAS AND ERASE CURRENTS

If one of the heads has been replaced, the following tests and adjustments should be performed. Connect VTVM as in Fig. 4 for measuring Bias, and Fig. 5 for Erase head current. (See page 14 for Figs.).

Channel 1

Set Erase current to 38ma by adjusting R8 for a VTVM reading of 380 millivolts. Set Bias current to 1ma by adjusting A1 for 200 millivolts on VTVM. As these adjustments are interactive, they must be repeated several times until the required values are found.

Channel 2

Repeat the above adjustment using R9 to adjust Erase current and A2 to adjust Bias current.

BALANCE ADJUSTMENTS

These measurements and adjustments are performed together.

1. Set the Switch to "Stereo" position. Set Volume and Tone controls fully counterclockwise.
2. Connect Audio Signal generator as shown in Fig. 1 on page 14.
3. Connect AC probe of VTVM as shown in Fig. 2.
4. With speed set to 7 1/2 ips and signal output from generator set for 1000 cycles at 45 millivolts, adjust R7 for equal outputs from the two channels. Change speed to 3 3/4 ips and reduce generator output to 40 millivolts. The outputs should measure 52 millivolts on each channel. If necessary, readjust R7 for a compromise between 7 1/2 and 3 3/4 ips to obtain the best possible balance between channels for both speeds.

FREQUENCY RESPONSE ADJUSTMENT

With test equipment connected as above, set Audio generator output to 1000 cycles. Adjust generator output so that VTVM reads 45 millivolts. Do not change generator output level but increase frequency to 15KC. The VTVM should now read 101 millivolts. If not, adjust the 15KC peaking coil for the channel concerned.

Switch speed to 3 3/4 ips. Set generator to 1000 cycles. Adjust generator output so that VTVM reads 53 millivolts. Without changing generator output level, increase frequency to 10KC. Meter reading should be 235 millivolts. If not, adjust the 10KC peaking control for the channel concerned.

CLEANING

The record head, erase head, capstan, and pressure roller should be cleaned occasionally to remove the tape residue which is worn off the tape as it passes these parts. Use a soft cloth and alcohol to remove the residue.

LUBRICATION

All rotating parts are provided with oilite bearings and are lubricated before leaving the factory. Under normal use, no lubrication is required for a long period of time. When lubrication is necessary, use a good grade of oil sparingly.

TROUBLE CHART

Symptom	Cause	Remedy
No drive in the fast forward position.	1. Clutch drive belt (35) broken. 2. Clutch drive belt (35) slipping.	1. Replace clutch drive belt (35). 2. Clean clutch drive belt (35) and take-up drive with alcohol.
No drive in the rewind position.	1. Rewind drive belt (36) broken. 2. Rewind actuating lever out of adjustment.	1. Replace rewind drive belt (36). 2. See "Rewind Idler" under "Adjustments".
Motor will not run.	1. Motor defective. 2. Bad or broken connection.	1. Replace motor. 2. Check motor leads for a cold solder joint or a broken lead.
Wow or flutter.	1. Play-record head (106), pressure pad, or tape guide dirty. 2. Motor pulley (54), flywheel (39), or pressure roller (89) coated with foreign matter. 3. Pressure roller (89) has a flat spot on it. 4. Tape defective.	1. Clean these parts with a soft cloth and alcohol. 2. Clean the surfaces of these parts with a cloth dampened with alcohol. 3. Replace pressure roller (89). 4. Replace the tape.
Incomplete or no erase.	1. Erase head (97) defective. 2. Defective erase head circuit.	1. Replace. 2. Check circuit components.
Pressure roller (89) contacts the capstan intermittently.	1. Pressure roller actuating lever misadjusted.	1. See "Pressure Roller" under "Adjustments".
Pressure roller (89) does not return to its neutral position when the stop button is depressed.	1. Pressure roller arm spring (95) disconnected or broken.	1. Connect or replace.
Brakes do not operate when the stop button is depressed.	1. Brake tension spring (110) broken or disconnected.	1. Connect or replace.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Model Used In	Ref. No.	Part No.	Description	Model Used in
1	5036-126	Plastic Hood Assembly	TK60/U	18	5025-091	Rewind Blocking Lever	
	5036-182	Plastic Hood Assembly	TM60/U	19	5025-094	Rewind Blocking Lever Spring	
2		Speed Selector Knob	TK60/U				
	5027-340	Speed Selector Knob	TM60/U	20		Rewind Blocking Lever Bracket	
3	5025-430	Head Cover Assembly	TK60/U				
	5036-016	Head Cover Assembly	TM60/U	21	0628-043	Clutch Spring Ring	
4	5040-263	Top Deck Assembly	TK60/U	22	5027-245	Upper Clutch Spindle	
	5036-180	Top Deck Assembly	TM60/U	23		"C" Washer	
5	5027-380	Deck Screw	TK60/U	24		Washer	
	5014-178	Deck Screw	TM60/U	25		Clutch Disc	TK60/U
6		Fibre Washer			5027-244	Right Upper Clutch Half	TM60/U
7	5027-068	Spindle		26		Right Clutch Plate	TK60/U
8	5027-061	Press Button			5027-240	Right Lower Clutch Half	TM60/U
9		Operating Lever	TK60/U	27		Right Clutch Drive Disc	
	5041-061	Operating Lever	TM60/U	28		Spacer	
10	5027-055	Locking Slide	TK60/U	29		Washer	
	5027-056	Press Button Lever	TM60/U	30		Right Clutch Assy. Mtg. Spindle	
11	5027-053	Press Button Stop Flap					
12		"C" Washer		31		Right Clutch Housing	
13	5027-073	Rewind Lever		32	5027-031	Cast Frame Assy.	TK60/U
14		Washer			5040-003	Cast Frame Assy.	TM60/U
15		Grip Ring		33	5027-289	Tension Spring	
16	5041-060	Press Button Unit		34	5025-145	Right Hand Brake	TK60/U
17		Screw				Right Hand Brake	TM60/U

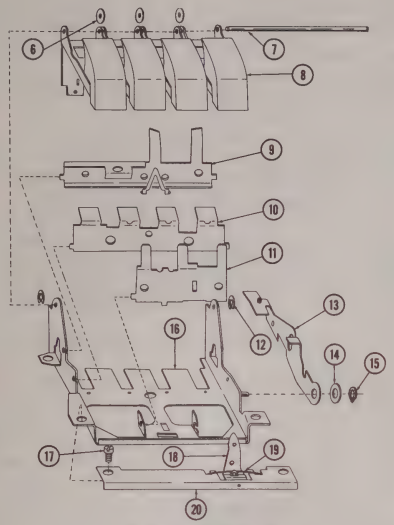


FIG.4A
EXPLODED VIEW OF PRESS BUTTON UNIT

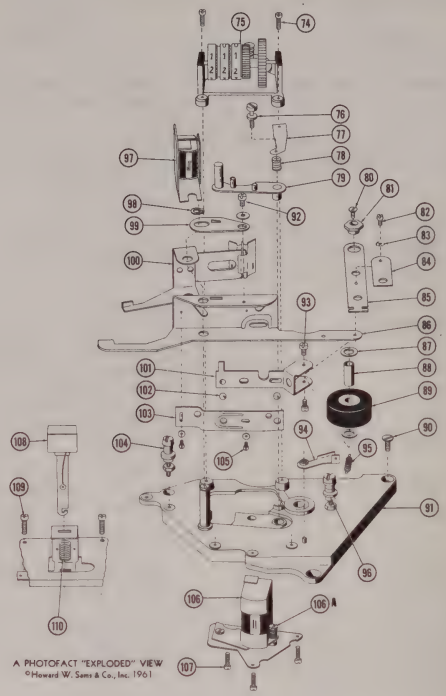


FIG.4B
EXPLODED VIEW OF PARTS ABOVE MOUNTING PLATE

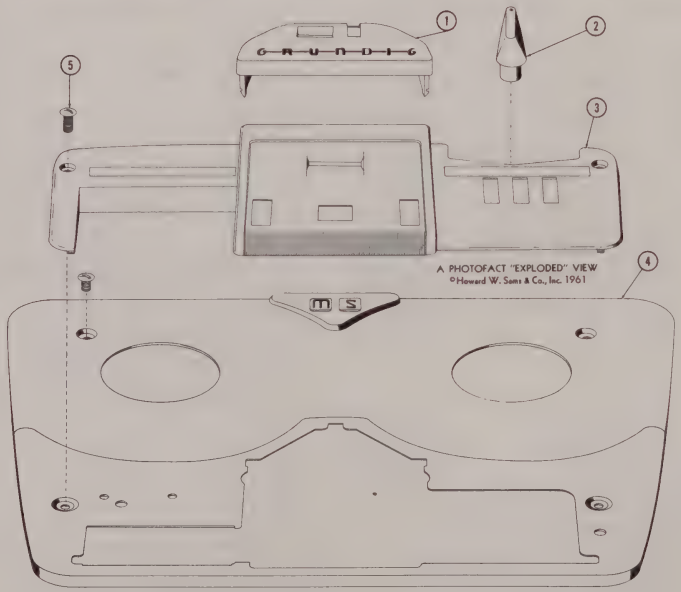
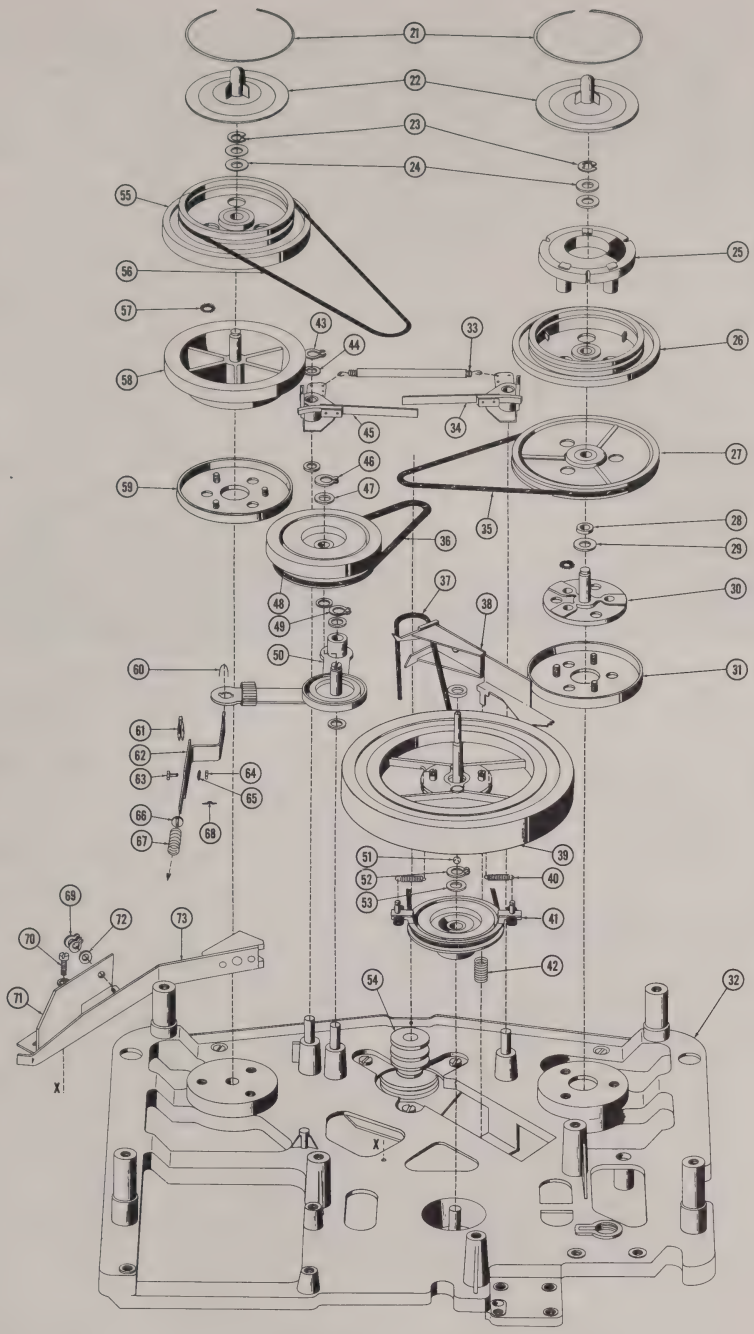


FIG.4C EXPLODED VIEW OF PARTS ABOVE TOP DECK



A PHOTOFACT "EXPLODED" VIEW
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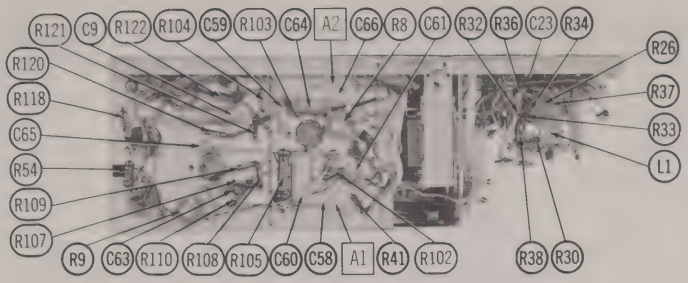
FIG. 4D EXPLODED VIEW OF PARTS ABOVE FRAME ASSEMBLY

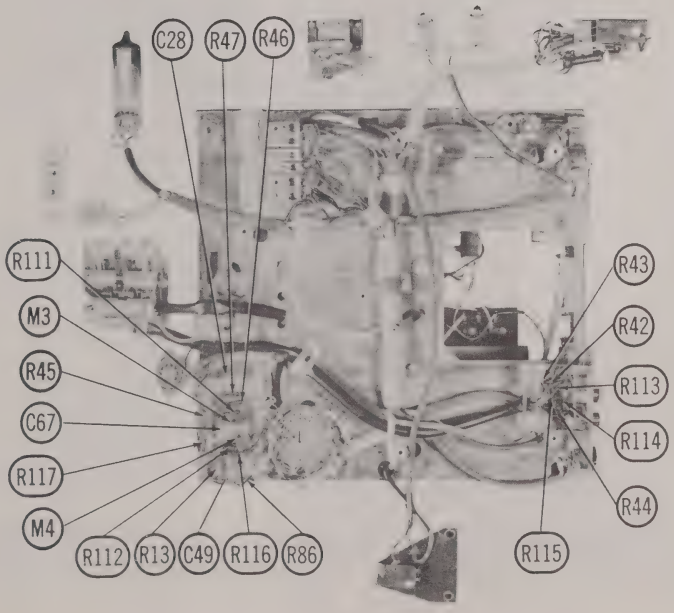
Ref. No.	Part No.	Description	Model Used In
35	9631-814	Clutch Drive Belt	TK60/ U
	9631-911	Clutch Drive Belt	TM60/ U
36	9631-822	Rewind Drive Belt	TK60/ U
	9631-912	Rewind Drive Belt	TM60/ U
37	9631-831	Flywheel Drive Belt	TK60/ U
	9631-910	Flywheel Drive Belt	TM60/ U
38	5027-299	Speed Change Lever Assembly	
39	5025-140	Flywheel Assembly	TK60/ U
	5027-095	Flywheel Assembly	TM60/ U
40	Part of Ref. No. 39	Tension Spring	
41	Part of Ref. No. 39	Flywheel Pulley Assy.	TK60/ U
	5027-084	Flywheel Pulley Assy.	TM60/ U
42		Speed Change Lever Tension Spring	
43		Grip Ring	
44		Washer	
45	5025-151	Left Hand Brake	TK60/ U
		Left Hand Brake	TM60/ U
46		Grip Ring	
47		Washer	
48	5027-254	Rewind Pulley Assy.	
49		Grip Ring	
50	5027-249	Rewind Lever Assy.	TK60/ U
	5027-263	Rewind Lever Assy.	TM60/ U
51	Part of Ref. No. 39	Ball Bearing	
52	Part of Ref. No. 39	Grip Ring	
53	Part of Ref. No. 39	Washer	
54		Motor Pulley	
55	5027-220	Left Hand Clutch Assy.	TK60/ U
	5027-255	Left Upper Clutch Half	TM60/ U
56	5027-046	Counter Drive Belt	TK60/ U
	9631-816	Counter Drive Belt	TM60/ U
57		Lock Washer	
58	Part of Ref. No. 55	Left Hand Clutch Spindle	TK60/ U
	5027-221	Left Lower Clutch Half	TM60/ U
59	Part of Ref. No. 55	Left Clutch Housing	
60		Retainer	
61		Rewind Lever Adjusting Eccentric	
62	5027-263	Rewind Lever Assembly	TK60/ U
	5027-063	Rewind Lever Assembly	TM60/ U
63		Hex Head Screw	
64		Hex Nut	
65		Lock Washer	
66		Washer	
67		Tension Spring	
68		Retainer Pin	
69		Grip Ring	
70		Screw	

Ref. No.	Part No.	Description	Model Used In
71		Fast Forward Lever Bracket	
72		Washer	
73	5027-073	Fast Forward Lever Assy.	TK60/ U
	5027-294	Fast Forward Lever Assy.	TM60/ U
74		Screw	
75	7485-713	Tape Counter Assembly	
76	5014-188	Small Tape Guide	
77		Tape Guide Support Arm	TK60/ U
	7485-593	Tape Guide Support Arm	TM60/ U
78		Tape Guide Tension Spring	TK60/ U
	9619-520	Tape Guide Tension Spring	TM60/ U
79		Tape Tension Lever	
80		Screw	
81	5027-137	Eccentric Disc	
82		Screw	
83		Lockwasher	
84		Locking Plate	
85	5027-138	Relay Arm	
86	7485-606	Pressure Roller Arm Assembly	TK60/ U
	7485-603	Pressure Roller Arm Assembly	TM60/ U
87		Fibre Washer	
88		Pressure Roller Sleeve	TK60/ U
	7485-610	Pressure Roller Sleeve	TM60/ U
89		Pressure Roller Assy.	TK60/ U
	7485-606	Pressure Roller Assy.	TM60/ U
90		Screw	
91		Mounting Plate	
92		Screw	
93		Pressure Roller Mtg. Screw	
94		Pressure Roller Return Arm.	
95	7485-677	Pressure Roller Arm Spring	
96	7485-705	Insulated Tape Guide	
97	7489-026/027	Stereo Erase Head Assy.	
98		Grip Ring	
99	7485-635	Pressure Roller Arm. Adj. Blade	
100	7485-695	Pressure Pad Bracket Assembly	
101		Pressure Roller Bracket	
102		Ball Bearing	
103	7485-611	Spring Blade	
104	7485-640	Tape Guide	
105		Screw	
106	7489-024/025	Stereo Record/ Playback Head Assy.	
106A		Stereo Record/ Playback Head Adj. Screw	
107		Mounting Screw	
108	7485-627	Stop Button	
109		Screw	
110	7485-629	Stop Button Spring	

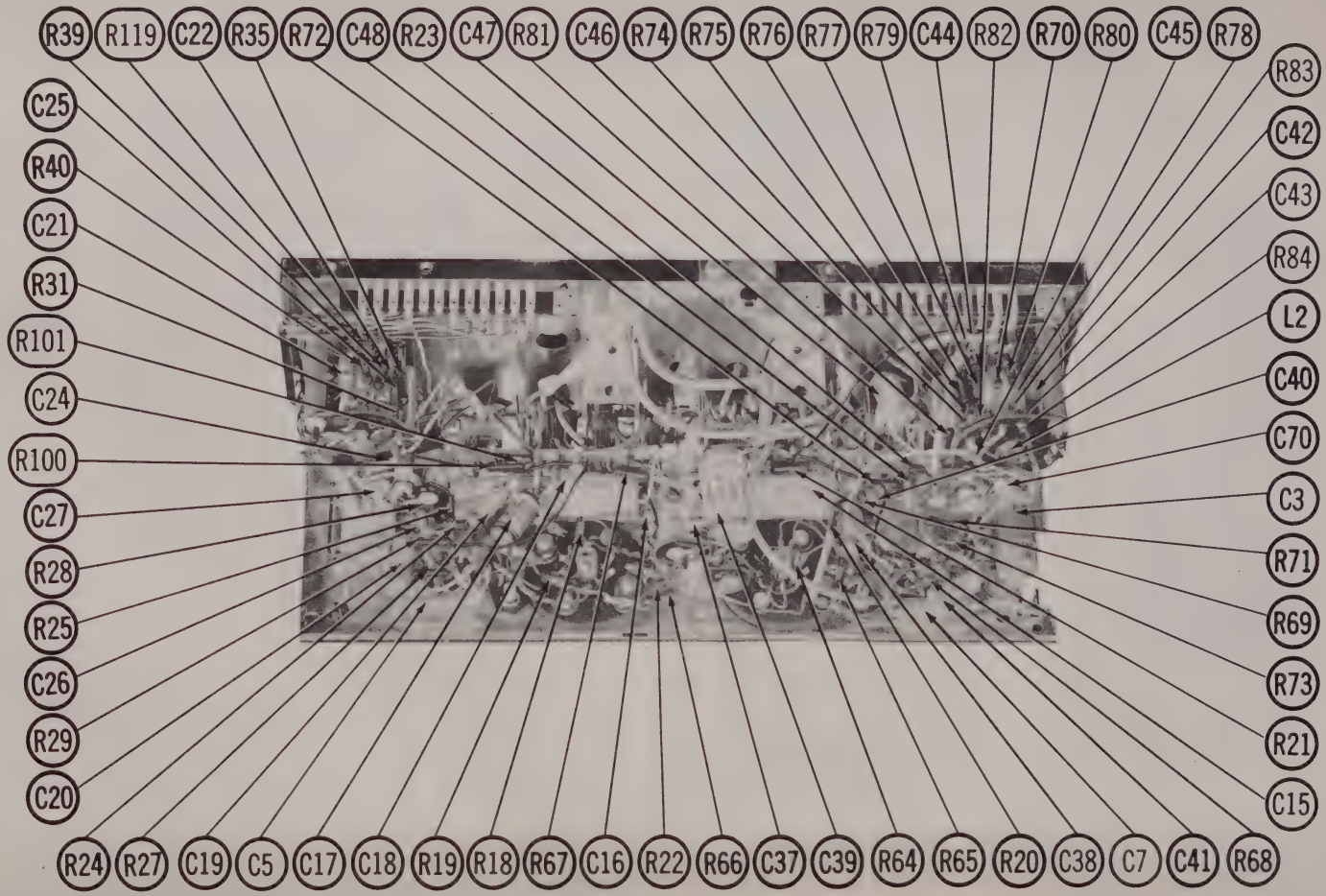


OUTPUT CIRCUIT

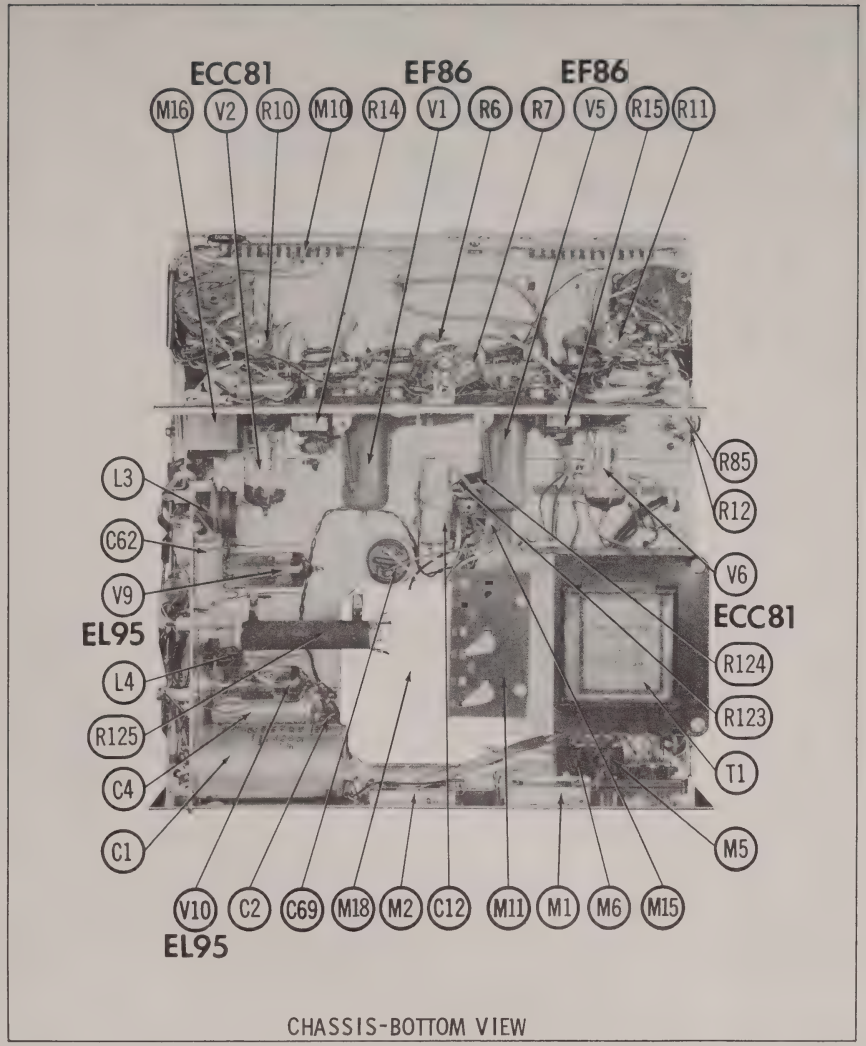
BIAS CIRCUIT



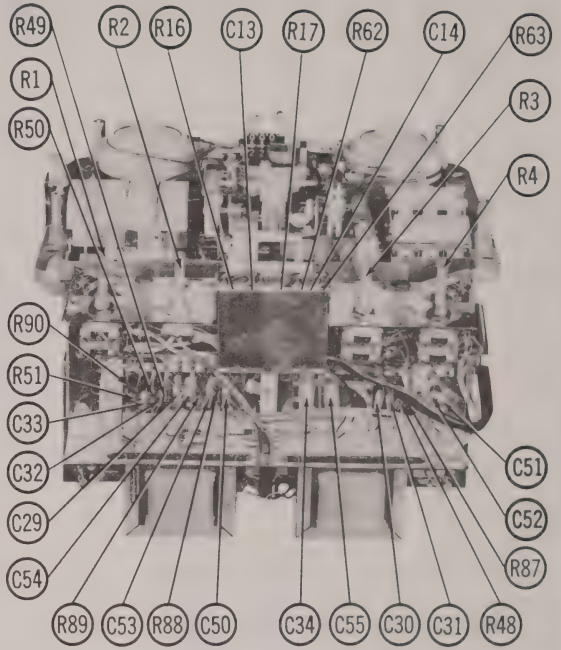
RECORD IND.-INPUT (RADIO-PHONO) CIRCUITS



AMP CHASSIS-BOTTOM VIEW



CHASSIS-BOTTOM VIEW

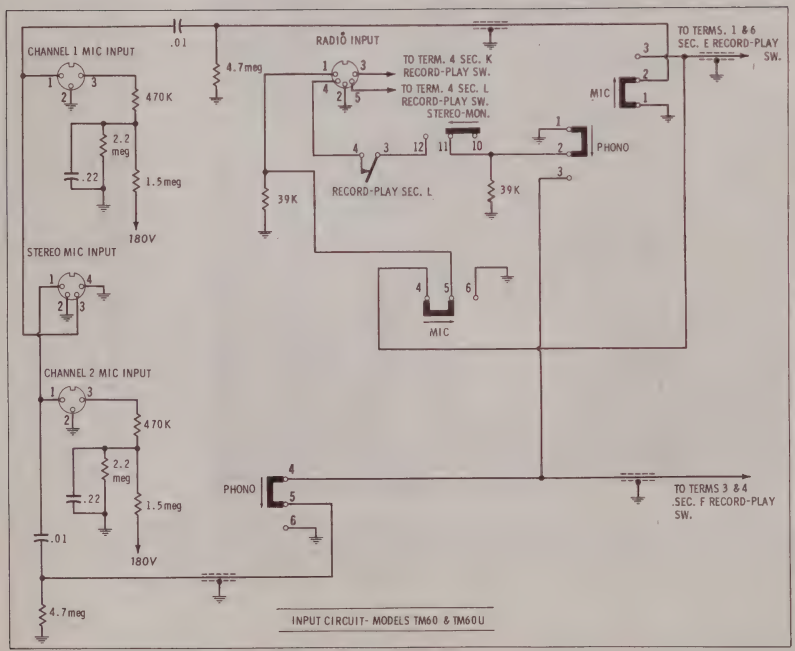


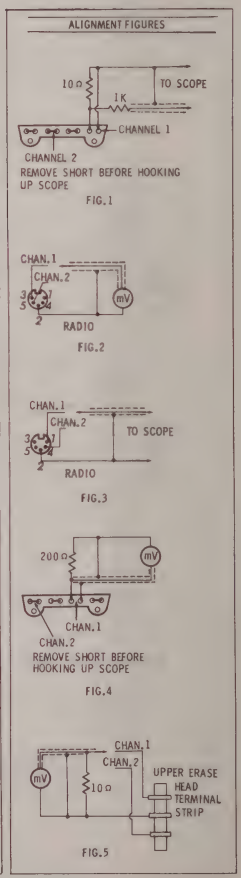
SIDE VIEW OF MECHANISM

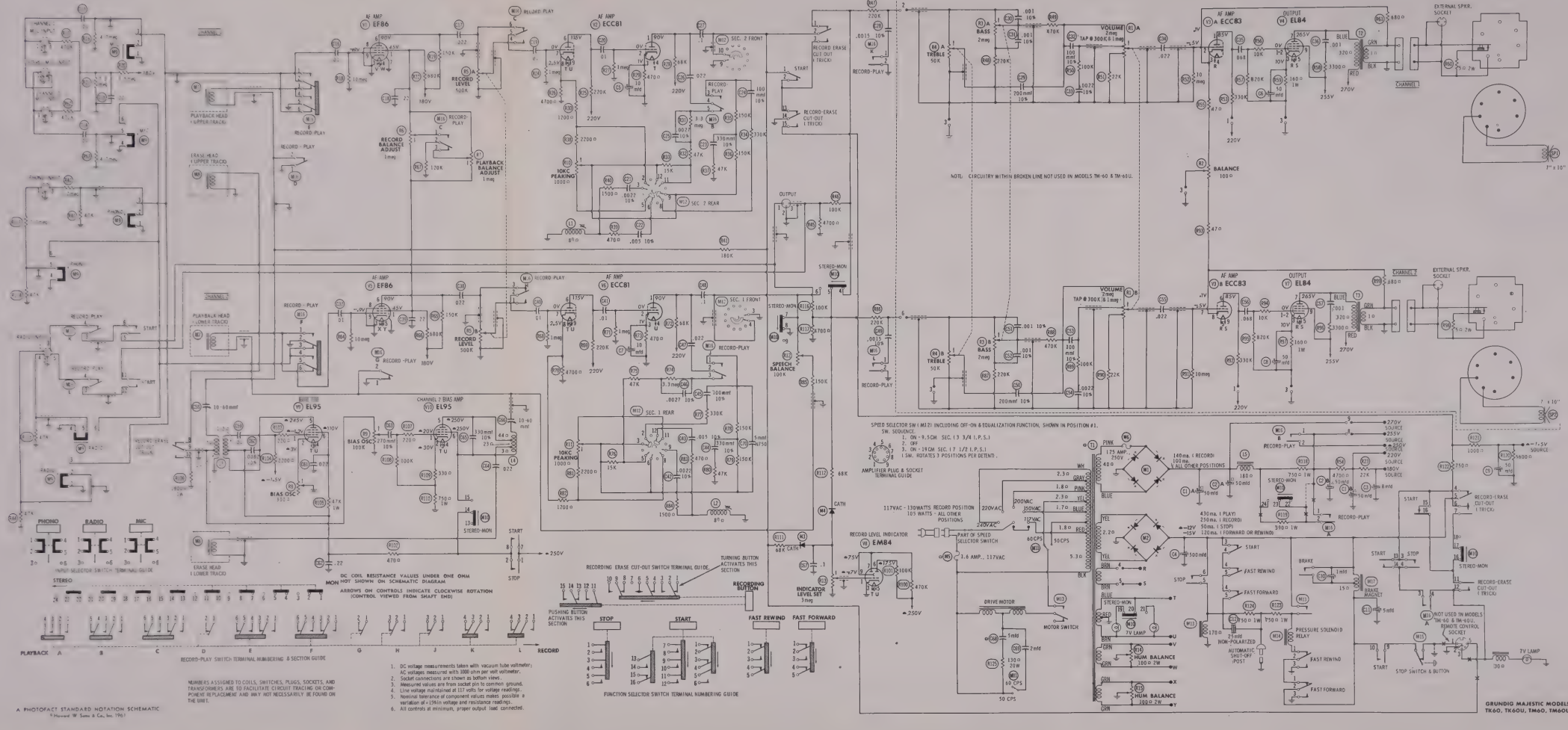
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86	†700K	0Ω	0Ω	FIL	FIL	†175K	0Ω	0Ω	10meg
V2	ECC81	†73K	1meg	470Ω	FIL	FIL	†225K	1meg	4700Ω	FIL
V3	ECC83	†330K	10meg	100Ω	FIL	FIL	†330K	10meg	100Ω	FIL
V4	EL84	NC	830K	160Ω	FIL	FIL	NC	†320Ω	NC	†930Ω ◓†180Ω
V5	EF86	†700K	0Ω	0Ω	FIL	FIL	†175K	0Ω	0Ω	10meg
V6	ECC81	†73K	1meg	470Ω	FIL	FIL	†225K	1meg	4700Ω	FIL
V7	EL84	NC	830K	160Ω	FIL	FIL	NC	†320Ω	NC	†930Ω ◓†180Ω
V8	EM84	1.1meg	NC	0Ω	FIL	FIL	◓†100K	◓†470K	NC	†470K
V9	EL95	8000Ω	180Ω	FIL	FIL	◓†700Ω	◓†47K	NC		
V10	EL95	100K	1000Ω	FIL	FIL	◓†210Ω	◓†180Ω	NC		

ALL MEASUREMENTS MADE IN "STEREO PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
◓ MEASURED IN "RECORD" POSITION.
† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION






AF AMP V1 EF86
AF AMP V2 ECC81
AF AMP V5 EF86
AF AMP V6 ECC81
AF AMP V7 ECC83
OUTPUT V4 EL84
OUTPUT V7 EL84
CHANNEL 2 BIAS AMP V11 EL95
BIAS OSC V9 EL95
RECORD LEVEL INDICATOR V8 EM84
RECORD BALANCE ADJUST
PLAYBACK BALANCE ADJUST
RECORD LEVEL
10KC PEAKING
SPEECH BALANCE
BASS
TREBLE
VOLUME
BALANCE
HUM BALANCE
INDICATOR LEVEL SET
PHONO
RADIO
MIC
STEREO
MON
PLAYBACK HEAD (UPPER TRACK)
ERASE HEAD (UPPER TRACK)
RECORD - PLAY
ERASE HEAD (LOWER TRACK)
PLAYBACK HEAD (LOWER TRACK)
EXTERNAL SPKR. SOCKET
7" x 10"
CHANNEL 1
CHANNEL 2
RECORD-ERASE CUT-OUT (TRICK)
STEREO-MON
DRIVE MOTOR
MOTOR SWITCH
PRESSURE SOLENOID
FAST REWIND
FAST FORWARD
BRAKE
BRAKE MAGNET
AUTOMATIC SHUT-OFF POST
7V LAMP
50 CPS
PUSHING BUTTON ACTIVATES THIS SECTION
RECORDING BUTTON
TURNING BUTTON ACTIVATES THIS SECTION
RECORDING ERASE CUT-OUT SWITCH TERMINAL GUIDE
INPUT SELECTOR SWITCH TERMINAL GUIDE
RECORD-PLAY SWITCH TERMINAL NUMBERING & SECTION GUIDE
FUNCTION SELECTOR SWITCH TERMINAL NUMBERING GUIDE
AMPLIFIER PLUG & SOCKET TERMINAL GUIDE
SPEED SELECTOR SW (M121) INCLUDING OFF-ON & EQUALIZATION FUNCTION, SHOWN IN POSITION #1.
SW. SEQUENCE.
1. ON - 9.5CM SEC. (3 3/4 I.P.S.)
2. OFF
3. ON - 19CM SEC. (7 1/2 I.P.S.)
1 SW. ROTATES 3 POSITIONS PER DETENT.
117VAC - 130WATTS RECORD POSITION
105 WATTS - ALL OTHER POSITIONS
140ma. (RECORD)
100 ma. (ALL OTHER POSITIONS
430 ma. (PLAY)
250 ma. (RECORD)
50 ma. (STOP)
120 ma. (FORWARD OR REWIND)
NOT USED IN MODELS TM-60 & TM-60U. REMOTE CONTROL SOCKET
NOTE: CIRCUITRY WITHIN BROKEN LINE NOT USED IN MODELS TM-60 & TM-60U.
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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GRUNDIG MAJESTIC MODELS TK60, TK60U, TM60, TM60U

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Channel 1 AF Amp.	EF86
V2	Channel 1 AF Amp.	ECC81
V3	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83
V4	Channel 1 Output	EL84
V5	Channel 2 AF Amp.	EF86
V6	Channel 2 AF Amp.	ECC81
V7	Channel 2 Output	EL84
V8	Record Level Indicator	EM84
V9	Bias Osc.	EL95
V10	Channel 2 Bias Amp.	EL95

ELECTROLYTIC CAPACITORS

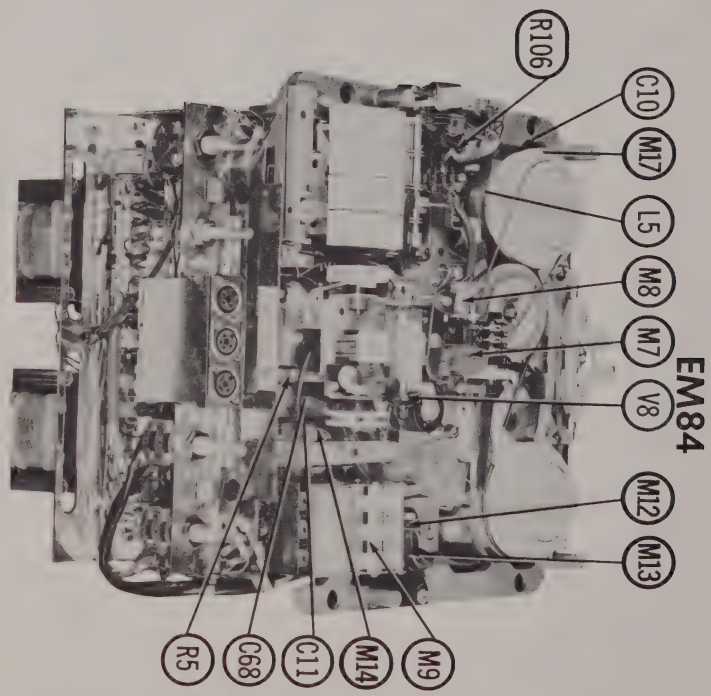
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Grundig Majestic PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	350			A0390	FP137	TMS-1630	TVL-1622	
B	▲50	350			BR5035	TC79	TD-50-450	TVA-1713	
C2A	▲50	350			A0390	FP137	TMS-1630	TVL-1622	
B	▲50	350			BR5035	TC79	TD-50-450	TVA-1713	
C3	8	350		PRS1610	BR835	TC61	TD-8-350	TVA-1603	
C4	500	35							
C5	10	12		PTT53	NLW10-15	TT12X10	MLV10-12	TE-1128	
C6	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C7	10	12		PTT53	NLW10-15	TT12X10	MLV10-12	TE-1128	
C8	50	12		PTT59	NLW50-15	TT15X50	MLV50-12	TE-1133	
C9	50	30		PTT98	NLW50-50	TC39	MLV50-50	TE-1307	
C10	1	70		PRS1700	NLW1-150	TT150X1	MLV1-150	TE-1400	
C11	5	100		SRE150V5	NLW5-150	TC40	MLV5-100	TE-1404	
C12	25	35NP		PRS6500	BR2515			TVANS-1306.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C13	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C14	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C15	.22 250V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C16	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C17	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C18	.22 250V		P488N-22		CUB4D22	4DP-5-224	GEM-4022	4TM-P22
C19	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C20	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C21	.0022 10%				PM6D22	CCD-222	GP222	10TS-D22
C22	.005 10%				PM6D5	CCD-502	JL-250	10TS-D50

CHASSIS—SIDE VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C23	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C24	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C25	.0027 10%				1R5D27	CCD-272		10TS-D27
C26	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C27	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C28	.0015 10%			DD-152	PM6D15	CCD-152	GP215	10TS-D15
C29	200 10%		NPO-SI 220	D6-201	L10T2	CCD-201	GP320	10TS-T20
C30	.001 10%			DD-102	PM6D1	CCD-102	GP210	10TS-D10
C31	.001 10%			DD-102	PM6D1	CCD-102	GP210	10TS-D10
C32	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C33	.0022 10%				PM6D22	CCD-222	GP222	10TS-D22
C34	.022 250V		P488N-022	D6-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C35	.068 500V		P688N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C36	.001 500V		P688N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C37	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C38	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C39	.22 250V		P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C40	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C41	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C42	.0022 10%				PM6D22	CCD-222	GP222	10TS-D22
C43	.005 10%				PM6D5	CCD-502	JL-250	10TS-D50
C44	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C45	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C46	.0027 10%				1R5D27	CCD-272		10TS-D27
C47	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C48	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C49	.0015 10%			DD-152	PM6D15	CCD-152	GP215	10TS-D15
C50	200 10%		NPO-SI 220	D6-201	L10T2	CCD-201	GP320	10TS-T20
C51	.001 10%			DD-102	PM6D1	CCD-102	GP210	10TS-D10
C52	.001 10%			DD-102	PM6D1	CCD-102	GP210	10TS-D10
C53	100 10%		NPO-SI 100	D6-101	L10T1	CCD-101	GP310	10TS-T10
C54	.0022 10%				PM6D22	CCD-222	GP222	10TS-D22
C55	.022 250V		P488N-022	D6-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C56	.068 500V		P688N-068		CUB6S68	6DP-4-683	GEM-6168	6TM-S68
C57	.001 500V			DD-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C58	10-60			823-AZ		404		
C59	.01 500V		P688N-01	D6-103	CUB6S1	6DP-2-103	GEM-611	6TM-S10
C60	.0082 10%				1DR5082	CCD-822		5BF-D82
C61	.022 500V		P688N-022	DD-203	CUB6S22	6DP-2-223	GEM-6122	6TM-S22
C62	.22 500V		P688N-22		CUB6P22	6DP-5-224	GEM-6022	6TM-P22
C63	270 10%		NPO-SI 270	D6-271	L10T27	CCD-271	GP327	10TS-T27
C64	.022 500V		P688N-022	DD-203	CUB6S22	6LP-2-223	GEM-6122	6TM-S22
C65	330 10%			D6-331	L10T33	CCD-331	GP333	10TS-T33
C66	10-60			823-AZ		404		
C67	.1 500V		P688N-1	DF-104	CUB6P1	6DP-4-104	GEM-601	6TM-P10
C68	5mfd 220V	Note 1						
C69	2mfd 220V		RR-661A		CRX-3020			
C70	5 N750			DTN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50

Note 1. 6mfd used in Model TM-60U.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Grundig Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg *			ABT-175				Volume, Channel 1 (Note)
B	2meg*			STR-175				Volume, Channel 2 (Note 1)
C	Shaft			AK-29				
R2A	100Ω			AB-1				Balance (Note 1)
B	Shaft			AK-29				
R3A	2meg			AB-75				Bass, Channel 1 (Note 1)
B	2meg			SR-75				Bass, Channel 2 (Note 1)
C	Shaft			AK-29				
R4A	50K			AB-31				Treble, Channel 1 (Note 1)
B	50K			SR-31				Treble, Channel 2 (Note 1)
C	Shaft			AK-29				
R5A	500K		7885-001					Record Level, Channel 1
B	500K							Record Level, Channel 2

CONTROLS (cont)

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Grundig-Majestic PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R6	1meg							Record Balance Adjust
R7	1meg							Playback Balance Adjust
R8	300Ω							Bias Osc. Channel 1
R9	100K							Bias Osc. Channel 2
R10	1000Ω							10KC Peaking, Channel 1
R11	1000Ω							10KC Peaking, Channel 2
R12	100K							Speech, Balance
R13	3meg							Indicator Level Set.
R14	100Ω	2(WW)	41469					Hum Balance, Channel 1
R15	100Ω	2(WW)	41469					Hum Balance, Channel 2

Note 1. Not used in Model TM-60, U.
* Taps @ 300K and 1meg.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R16	4.7meg				R64	10meg			
R17	470K				R65	150K			
R18	10meg				R66	680K			
R19	150K				R67	120K			
R20	1.5meg				R68	1meg			
R21	2.2meg				R69	220K			
R22	680K				R70	4700Ω			
R23	22K				R71	1meg			
R24	1meg				R72	68K			
R25	220K				R73	470Ω			
R26	4700Ω				R74	3.3meg			
R27	1meg				R75	47K			
R28	68K				R76	15K			
R29	470Ω				R77	330K			
R30	1200Ω				R78	150K			
R31	3.3meg				R79	150K			
R32	47K				R80	47K			
R33	15K				R81	2200Ω			
R34	330K				R82	1200Ω			
R35	150K				R83	470Ω			
R36	150K				R84	1500Ω			
R37	47K				R85	150K			
R38	2200Ω				R86	220K			
R39	470Ω				R87	220K			
R40	1500Ω				R88	470K			
R41	180K				R89	100K			
R42	2.2meg				R90	22K			
R43	47K				R91	10meg			
R44	47K				R92	330K			
R45	4700Ω				R93	47Ω			
R46	100K				R94	10K			
R47	220K				R95	820K			
R48	220K				R96	3300Ω			
R49	470K				R97	160Ω 1W			
R50	100K				R98	5Ω 2W			
R51	22K				R99	680Ω			
R52	10meg				R100	470K			
R53	330K				R101	100K			
R54	4700Ω				R102	470Ω			
R55	47Ω				R103	220Ω			
R56	10K				R104	2200Ω			
R57	820K				R105	47K 1W			
R58	3300Ω				R106	1800Ω 1W			
R59	160Ω 1W				R107	220Ω			
R60	5Ω 2W				R108	100K			
R61	680Ω				R109	330Ω			
R62	470K				R110	750Ω 1W			
R63	4.7meg				R111	68K			

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R112	68K			
R113	2.2meg			
R114	47K			
R115	47K			
R116	100K			
R117	4700Ω			
R118	750Ω 1W			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R119	390Ω 1W			Note 1
R120	5600Ω			
R121	1000Ω			
R122	750Ω			
R123	750Ω 1W			
R124	750Ω 1W			
R125	130Ω 20W	PW20-130	20W-SQ-130	

Note 1. Not used in Model TM 60U.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA Grundig Majestic PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Channel 1 15KC	BV9281-018					
L2	Channel 2 15KC	BV9281-018					
L3	Channel 1 Osc.	BV9281-048					
L4	Channel 2 Osc.	BV9281-049					

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L5	.060A	170Ω	4.5HY	BV9038-507					

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	240V Tap ⓖ 220V, 200V, 165V, 150V, 135V, 117V, ⓖ 1.2A	220V ⓖ .230A AC	20V ⓖ .680A AC	BV9007-506①					① Part #BV9007-509 used in Model TM60U
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ⓖ 1.8A	6.3VCT ⓖ 2.1A	6.3V ⓖ .5A						
	SEC. 6								
	6.3V ⓖ .5A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA Grundig Majestic PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	4500Ω	3-4Ω	BV9066-501	A-3019①	A-8092①	26S49①	S-5X①	① Drill new mounting hole(s).
T3	4500Ω	3-4Ω	BV9066-501	A-3019①	A-8092①	26S49①	S-5X①	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA Grundig Majestic PART No.	QUAM PART No.	NOTES
SP1	7"x 10"	PM	3-4Ω	7045-9		
SP2	7"x 10"	PM	3-4Ω	7045-9		

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA Grundig Majestic PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.140A	B250C100 *	1N1763 †			* Selenium Bridge.
M2	.120A	B30C600 *	1N2858 ♦			† 4 Required. Add 8Ω surge limiter in series with each HV secondary lead.
						♦ 4 Required.

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA Grundig Majestic PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3		E25C5				
M4		E25C5				

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Grundig Majestic PART No. FUSE	HOLDER	LITTELFUSE PART No. FUSE	HOLDER	BUSS PART No. FUSE	HOLDER
M5		1.6A 117VAC S/B						
M6		.8A* 220V S/B .25A 250V S/B						

* Used when AC input voltage is 220VAC.

MISCELLANEOUS

ITEM No.	PART NAME	Grundig Majestic PART No.	NOTES
M7	Head Assy.	7489-024/025	Playback
M8	Head Assy.	7489-026/027	Erase
M9	Switch	5025-070	Input Selector Pushbutton
M10	Switch		Mono-Stereo (Slide Type Lever Operated)
M11	Switch	5036-202	50~-60~ Selector
M12	Switch	5040-109	Speed Selector, Includes Power Off-On (Includes Equalization (Rotary Wafer Type)
M13	Switch	5027-193	Off-On Micro Switch
M14	Relay Assy.	5027-166	Pressure Solenoid ("A" Magnet)
M15	Relay Assy.	7680-042	Auto Stop Assy. ("B" Magnet)
M16	Relay Assy.	5040-050	Recording Relay Assy ("C" Magnet)
M17	Relay Assy.	5027-337	Brake Relay Assy. ("D" Magnet)
M18	Motor	7882-067	Drive Ass'y.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	5040-132	Volume, Bass, Treble, Balance
Knob	5040-074	Mono-Stereo
Knob	7485-620	Recording Level
Button	5027-313	Recording
Button	5027-061	Stop, Start, Rewind, Forward
Button	7485-627	Temporary Stop

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

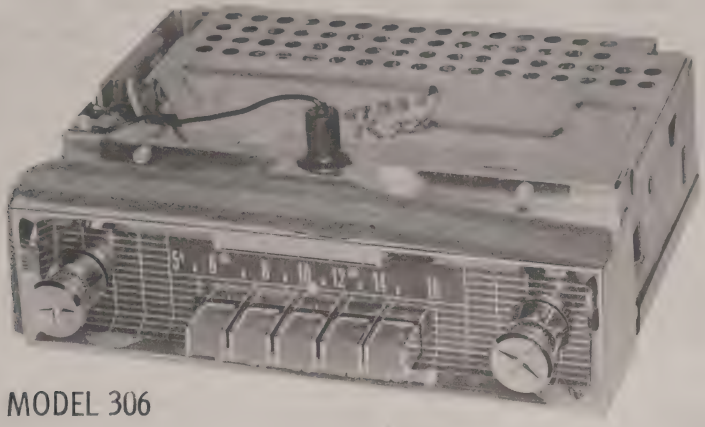
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

Low-Loss Shielded Lead (Interconnecting) ..... Use BELDEN No. 8401

Phono Pick-up Arm Cable ..... Use BELDEN No. 8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

**MOPAR MODELS
306, 312**



MODEL 306

TRADE NAME	Mopar Models 306 (13BD) For 1961 Dodge; 312 (13BS) For 1961 DeSoto
MANUFACTURER	Bendix Radio Div., The Bendix Corp., Baltimore 4, Maryland
TYPE SET	Battery Operated 3 Tube-3 Transistor Custom Built Automobile AM Receiver
POWER SUPPLY	12 Volts Storage Battery
TUNING RANGE—BROADCAST	530 — 1605KC RATING .8 Amp. @ 12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1 thru A4.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A8, A9, A10.....GENERAL CEMENT #9050-L, 9150
WALSCO #2521, 2524

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Antenna receptacle thru dummy (Fig. 1).	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. If necessary, back tuning cores (A8, A9, A10) out of coils. Repeat Step 2.					
3.	Antenna receptacle thru dummy (Fig. 1).	1000KC	Tuner carriage .5" movement from high end stop.	Across voice coil.	A8, A9, A10	Adjust for maximum output. Repeat Steps 2 and 3.
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1600KC and adjust A7 for maximum output.					

PUSHBUTTON ADJUSTMENT

1. Pull Pushbutton out.
2. Tune manually to desired station.
3. Press Pushbutton in firmly.
4. Repeat for remaining Pushbuttons.

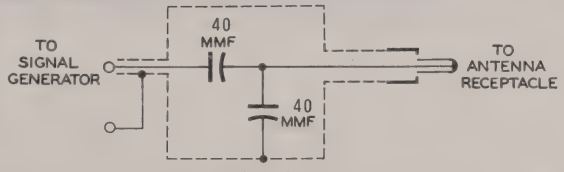


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD793

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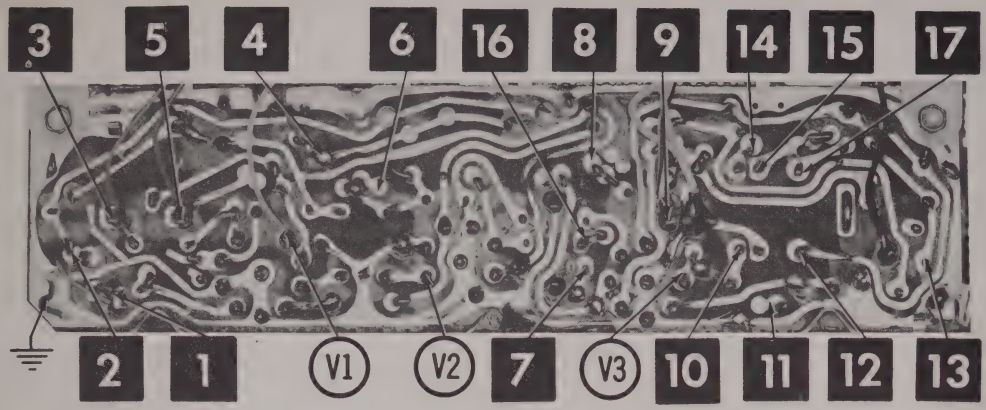
MOPAR MODELS
306, 312

MOPAR MODELS
306, 312

SET 549 FOLDER 11



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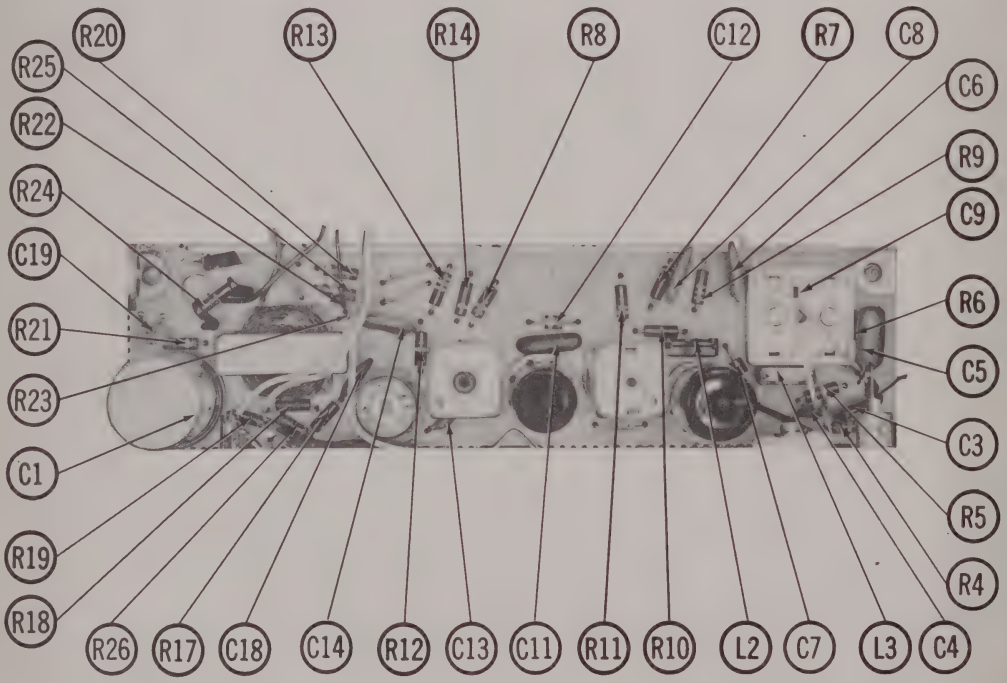
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



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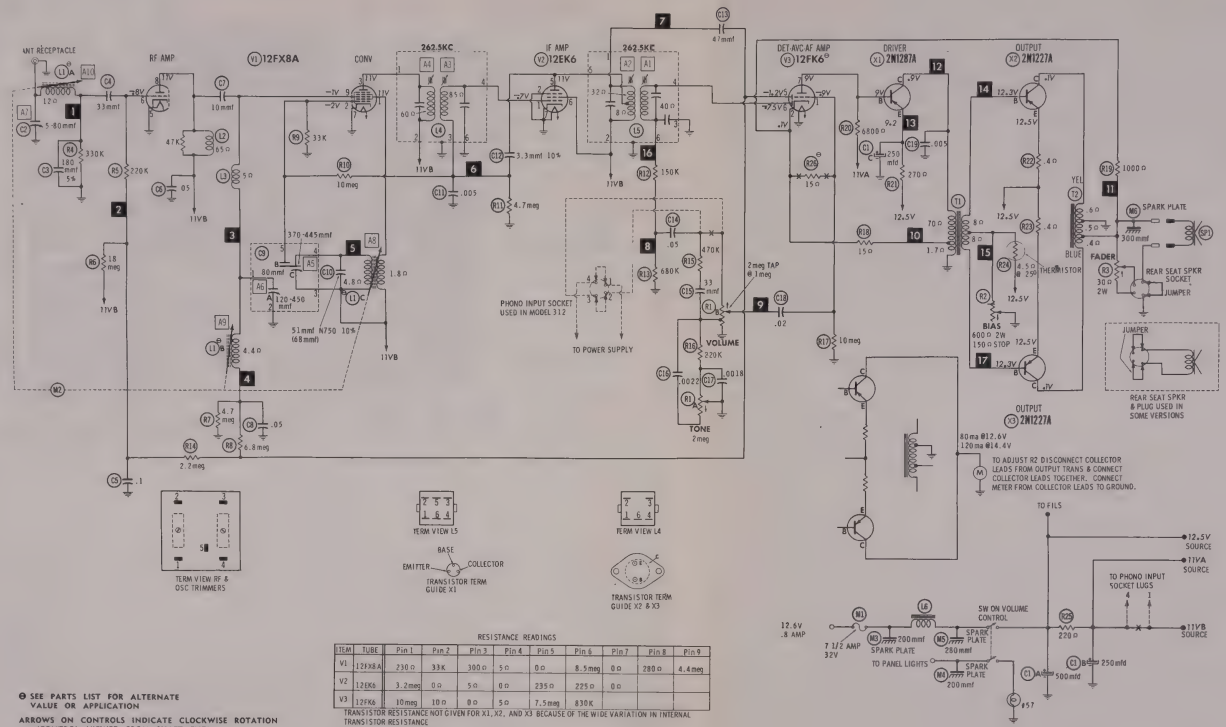

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8A	230Ω	33K	300Ω	5Ω	0Ω	8.5meg	0Ω	280Ω	4.4meg
V2	12EK6	3.2meg	0Ω	5Ω	0Ω	235Ω	225Ω	0Ω		
V3	12FK6	10meg	10Ω	8Ω	5Ω	7.5meg	830K			

TRANSISTOR RESISTANCE NOT GIVEN FOR X1, X2, AND X3 BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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MOPAR MODELS 306, 312

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	RF Amp. -Converter	12FX8A
V2	IF Amplifier	12EK6
V3	Det. -AVC-AF Amp.	12FK6 (12FM6) *

* Alternate

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1287A	Driver	2N591	2N362		PNP
X2	2N1227A	Output	2N301	2N633		PNP Note 1
X3	2N1227A	Output	2N301	2N633		PNP Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	16	220353-13	PWH3-00-94		PWP300.4		PCLS-3026.6*	
B	250	16							
C	250	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	5-80	#219083-3				462		
C3	180 5%		1469-00018	TCZ-180	22R5T18	CM-19B-181J	CNO-318	MS-318
C4	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C5	.1 100V		P288N-1	DF-104	CUB2P1	1DP-2-104	GEM-201	2TM-P10
C6	.05		BPD-05	DD-503	CUB2S5	1DP-2-503	GP150	5HK-S50
C7	10		SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C8	.05		BPD-05	DD-503	CUB2S5	1DP-2-503	GP150	5HK-S50

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9A	120-450	#219092-16						
B	80							
C	370-445							
C10	51 N750 10%	(68) †		N750-51	C10Q51U		CCTN-47	CN7-447	10TCU-Q47
C11	.005 100V		P288N-005	D6-502		1DP-1-502	B-250	5HK-D50
C12	3.3 10%		NPO-SI 3.3	TCZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C13	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C14	.05		BPD-05	DD-503	CUB2S5	1DP-2-503	GP150	5HK-S50
C15	33		DI-33	DD-330	L10Q33	CCD-330	GP433	10TS-Q33
C16	.0022		BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C17	.0018		DI-1800	DD-182	L10D18	CCD-182	B-182	10TS-D18
C18	.02		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C19	.005		BPD-005	DD-503	BYA10D5	CCD-502	B-250	5HK-D50

\# Bendix Part Number. † Alternate Value.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg		2091339-3					Tone
B	2meg							Volume
	1meg Tap							
C	Switch							Power Off-On
R2	600Ω	2(WW)	219555-14		39-700-200	112-500 *	FL-600S	
	150Ω Stop							
R3	30Ω	2(WW)	2091087-1					Fader

* Use 150Ω 2W Series Resistor.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R4	330K			
R5	220K			
R6	18meg			
R7	4.7meg			
R8	6.8meg			
R9	33K			
R10	10meg			
R11	4.7meg			
R12	150K			
R13	680K			
R14	2.2meg			
R15	470K			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R16	220K			
R17	10meg			
R18	15Ω			
R19	1000Ω			
R20	6800Ω			
R21	270Ω			
R22	.4Ω			Pt. #2091295-2
R23	.4Ω			Pt. #2091295-4
R24	4.5Ω @ 25*			Pt.#220629-11
R25	220Ω			
R26	15Ω			Note 1

Note 1. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: BENDIX PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1A	Ant.	2090131-26 ①					① Part of M2
B	RF						② Includes 47K
C	Osc.						
L2	RF Choke (2MH)	2090088-12②					
L3	RF Choke (65uh)	2090088-11					
L4	Input IF	2090876-5					
L5	Output IF	2090877-6					
L6	"A" Lead Choke (1.1MH)	2091107-2					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA: BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2.5	1	2090433-8					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	REPLACEMENT DATA: BENDIX PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	25Ω Tap ③ 3-4Ω	2090266-6					

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA: BENDIX PART No.	QUAM PART No.	NOTES
SP1	6"x 9"	PM	3-4Ω	2091269-2	69A3	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA: BENDIX PART No. FUSE	BENDIX PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	SFE	7½A 32V	SFE 7½	221633-12*	30707.5 (SFE 7½A 32V)	15507.5	SFE 7½	HHH

* Cap Part #221633-3

MISCELLANEOUS

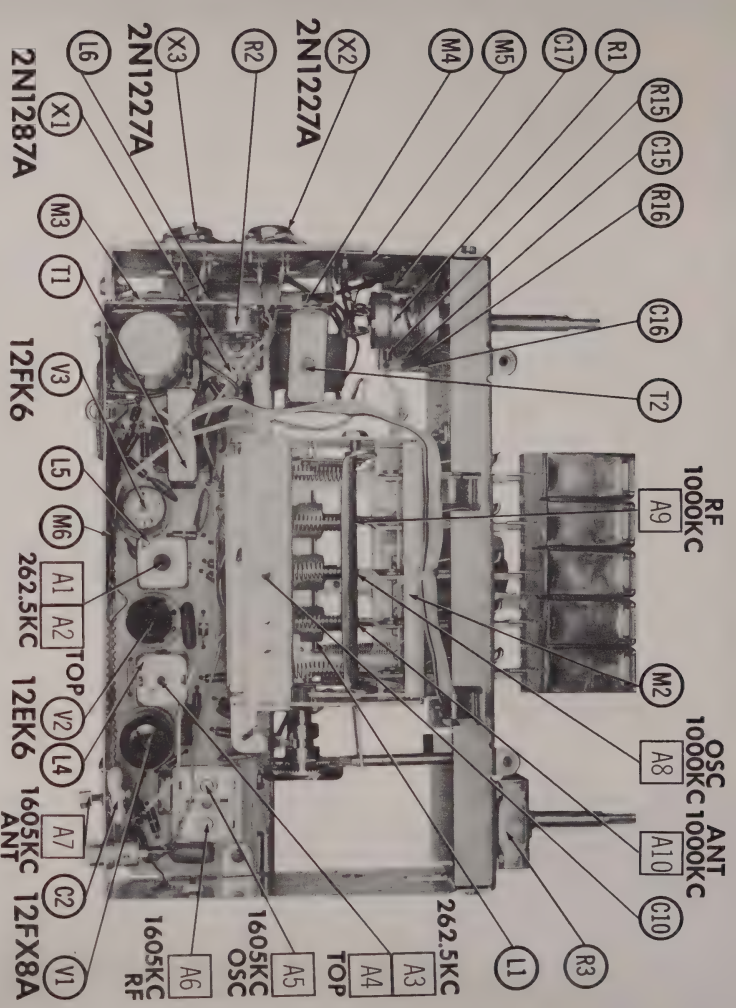
ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Tuner Assembly	2091576-3	(Less Pointer)
M3	Sparkplate	220267-17	(200mmfd)
M4	Sparkplate	220267-17	(200mmfd)
M5	Sparkplate	220267-18	(280mmfd)
M6	Sparkplate	220267-12	(300mmfd)
	Printed Circuit Board	2091322-1	(Less Tubes)
	Printed Circuit Board	2091321-2	(Small)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	2091716-2	Model 306
Dial Glass	2091716-1	Model 312
Dial Pointer	2091077-1	Model 306
Dial Pointer	2091080-3	Model 312
Knob	2091134-2	Tuning, Volume
Knob	2091135-3	Tone

CHASSIS—TOP VIEW



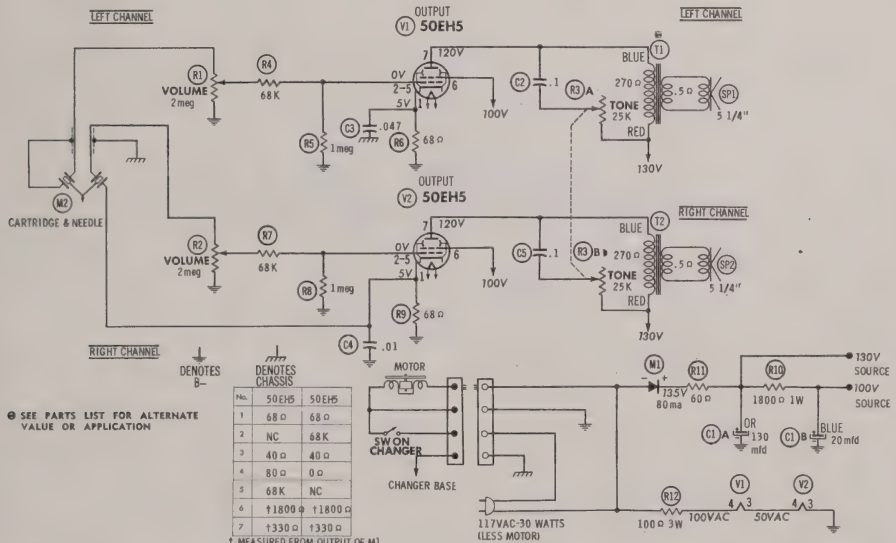
PHOTOFACT® Folder

PHILCO MODEL J-1423

PHILCO MODEL J-1423

TRADE NAME	Philco Models J-1423CR, J-1423TN (Code 121)
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	AC Operated 2 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 30 Watts, .32 Amp. ②117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER M44SS – SEE SIMILAR V-M 959 – PHOTOFACT SET 396 FOLDER 13 OR RECORD CHANGER MANUAL RC-11



No.	50EH5	50EH5
1	68Ω	68Ω
2	NC	68K
3	40Ω	40Ω
4	80Ω	0Ω
5	68K	NC
6	†1800Ω	†1800Ω
7	†330Ω	†330Ω

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

† MEASURED FROM OUTPUT OF M1.
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PHILCO MODEL J-1423

SET 549 FOLDER 12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Left Channel Output	50EH5
V2	Right Channel Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	130	150	30-2605-1	PRS3800	BBRD0183.7	TCT3117	TDLD-14	TVA-2462	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C3	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C4	.01 400V		P488N-01	DD-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C5	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	2meg	½	33-5572-47	B-76	A47-2meg-Z	Q13-139	U55	Volume, Left Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	2meg	½	33-5572-47	B-76	A47-2meg-Z	Q13-139	U55	Volume, Right Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	25K	½	33-5573-57	B-25				Tone, Left Channel
B	25K	½		SR-25				Tone, Right Channel

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	68K			
R5	1meg			
R6	68Ω			
R7	68K			
R8	1meg			
R9	68Ω			
R10	1800Ω 1W			
R11	60Ω			
R12	100Ω 3W	PW3-100	3W-SQ-100	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2900Ω	3-4Ω	32-8928-3①	A-3025	A-3332	24S53	S-16X	① Alternate Part #32-8928-2
T2	2900Ω	3-4Ω	32-8928-2	A-3025	A-3332	24S53	S-16X	

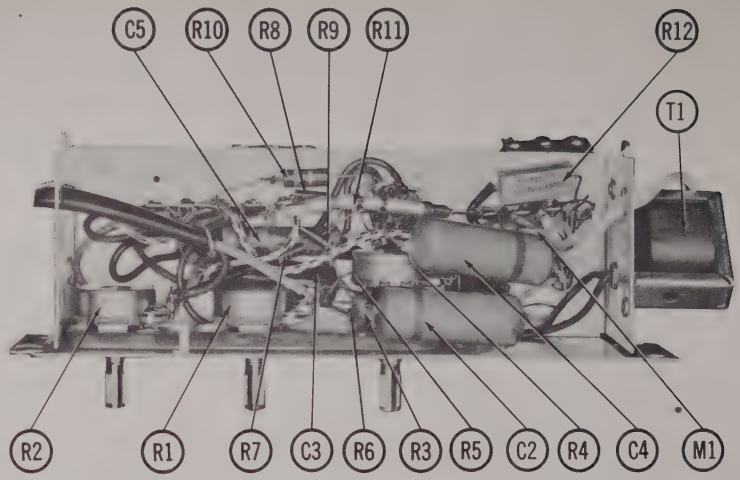
SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	QUAM PART No.	NOTES
SP1	5 1/4"	PM	3-4Ω	36-1669-14	52A1	
SP2	5 1/4"	PM	3-4Ω	36-1669-14	52A1	

POWER RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA PHILCO PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.080A	34-8050-5	1N1763	2F4	SR200	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	PHILCO PART No. CARTRIDGE	PHILCO PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M2	325-8052 ①	325-8253* (LP)	70TS	N8-7 *	96T	Not Req.	12TH-S	Not Req.	① includes Needles
		325-8143* (78RPM)		N8-3 *					

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	54-6728-5	
Handle	54-6519-3	Tan
Handle	54-6519-4	Cream
Cabinet	51-0145-1	Tan
Cabinet	51-0145-2	Cream

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT® Folder with CIRCUITRACE®

SILVERTONE MODELS 1202, 1203, 1204, 1205, 1206, 1207 (Ch. 132.50801, 132.50802, 132.60101, 132.60102)

SILVERTONE MODELS 1202, 1203, 1204, 1205, 1206, 1207 (Ch. 132.50801, 132.50802, 132.60101, 132.60102)

MODEL 1202

SILVERTONE MODELS 1202, 1203, 1204, 1205, 1206, 1207 (Ch. 132.50801, 132.50802, 132.60101, 132.60102)

TRADE NAME	Silvertone Models 1202, 1203 (Ch. 132. 50801 or 132. 50802); 1204 (Ch. 132. 50802); 1205, 1206, 1207 (Ch. 132. 60101 or 132. 60102)		
SUPPLIER	Sears Roebuck & Co., 925 S. Homan Ave., Chicago Illinois		
TYPE SET	Battery Operated Transistorized Portable AM Receiver		
POWER SUPPLY	9 Volts DC	RATING	10MA @ 9 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1650KC		15MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3.... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A5..... GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .05mfd to antenna stator lug of tuning gang. Low side to B-.	455KC (400∿ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1670KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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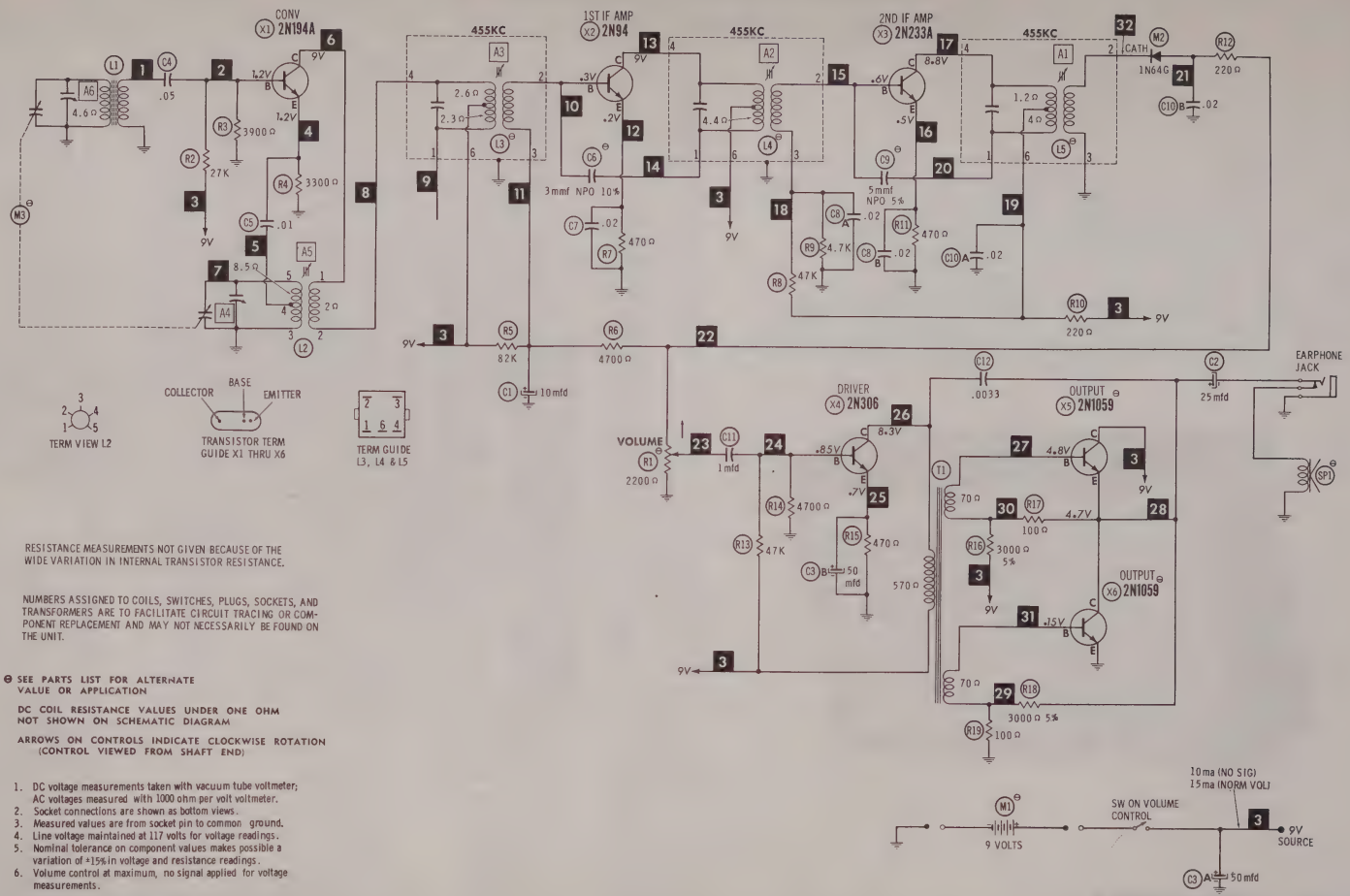
SET 549 FOLDER 13



RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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SILVERTONE MODELS 1202, 1203, 1204, 1205, 1206, 1207 (Ch. 132.50801, 132.50802, 132.60101, 132.60102)

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N194A	Converter		2N1366	2N194	NPN
X2	2N94	1st IF Amplifier	2N410	2N1367	2N94	NPN
X3	2N233A	2nd IF Amplifier		2N1367	2N233A	NPN
X4	2N306	Driver			2N306	NPN
X5	2N1059	Output	2N649		2N1059	NPN
	2N1431*	Output	2N649			
X6	2N1059	Output	2N649		2N1059	NPN
	2N1431*	Output	2N649			

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SILVERTONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	10	44396-2	PTT39	NLW10-15	TT12X10	MLV10-10	TE-1114	
C2	25	10	44396-6	PTT42	NLW25-10	TT10X25	MLV25-10	TE-1118	
C3A	50	10	44397-1	BCD10X5050	ECPAN5	PET2370	MLV50-10	TE-1119	
B	50	10					MLV50-10	TE-1119	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C5	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C6	3 NPO 10%	Note 1	NPO-D1 3.0	DTZ-3R3	C10V3C	CCTO-3R3	CNO-533	10TCC-V33
C7	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C8A	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
B	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	5 NPO 5%	Note 2	NPO-D1 5.0	DTZ-4R7	C10V5C	CCTO-4R7	CNO-547	10TCC-V50
C10A	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
B	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C11	1			UK-105				
C12	.0033		BPD-0033	DD-332	BYA10D33	CCD-332	GP233	5HK-D33

Note 1. Chassis 132.50801 & 132.60101 use 2.4mmf in this application.
Note 2. Chassis 132.50801 & 132.60101 use 6mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	2200Ω	1/4	48250-1①	B16-212				Volume & Switch

① Some versions of Chassis 132.50802 may use Part #48349-1.
Chassis 132.50801 uses Part #48349-1.
Chassis 132.60101 uses Part #49460-1.
Chassis 132.60102 uses Part #48349-1.

RESISTORS

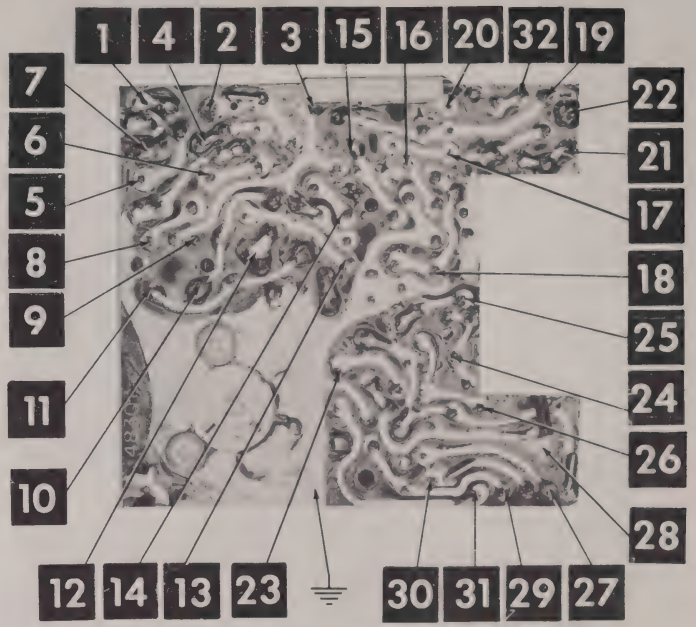
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R2	27K			
R3	3900Ω			
R4	3300Ω			
R5	82K			
R6	4700Ω			
R7	470Ω			
R8	47K			
R9	4700Ω			
R10	220Ω			

ITEM No.	RATING	REPLACEMENT DATA		REMARKS
		IRC PART No.	WORKMAN TV PART No.	
R11	470Ω			
R12	220Ω			
R13	47K			
R14	4700Ω			
R15	470Ω			
R16	3000Ω 5%			
R17	100Ω			
R18	3000Ω 5%			
R19	100Ω			

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo



COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SILVERTONE PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick	44511-7					
L2	Osc.	45783-15					
L3	1st IF	49375-1					Note 1
L4	2nd IF	49375-2					Note 2
L5	3rd IF	49375-3					Note 3

Note 1. Chassis 132.50801, 132.60101 use Part #48197-1.
Note 2. Chassis 132.50801, 132.60101 use Part #48197-2.
Note 3. Chassis 132.50801, 132.60101 use Part #48197-3.

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SILVERTONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3.8	1	45604-8					
		SEC. 2						
		1						

SILVERTONE MODELS 1202, 1203, 1204, 1205, 1206, 1207 (Ch. 132.50801, 132.50802, 132.60101, 132.60102)

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SILVERTONE PART No.	QUAM PART No.	
SP1	2 1/4"	PM PM	90-110Ω 70-80Ω	48352-2* 44280-4 ♣	22A06Z100	* Used in Models 1202, 1203, 1204 ♣ Used in Models 1205, 1206, 1207

BATTERIES

ITEM No.	VOLTAGE	SILVERTONE PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	6417 ① or 6416		2U6		216		M-1604	① Models 1205, 1206, 1207 use Part #6418 or 6421

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SILVERTONE PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N64G	48287		1N64	1N64	Detector

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
M3	Tuning Cap. Tuning Cap.	48885 48314	2 Gang — Chassis 132, 50801, 132, 50802 2 Gang — Chassis 132, 60101, 132, 60102

CABINETS & CABINET PARTS

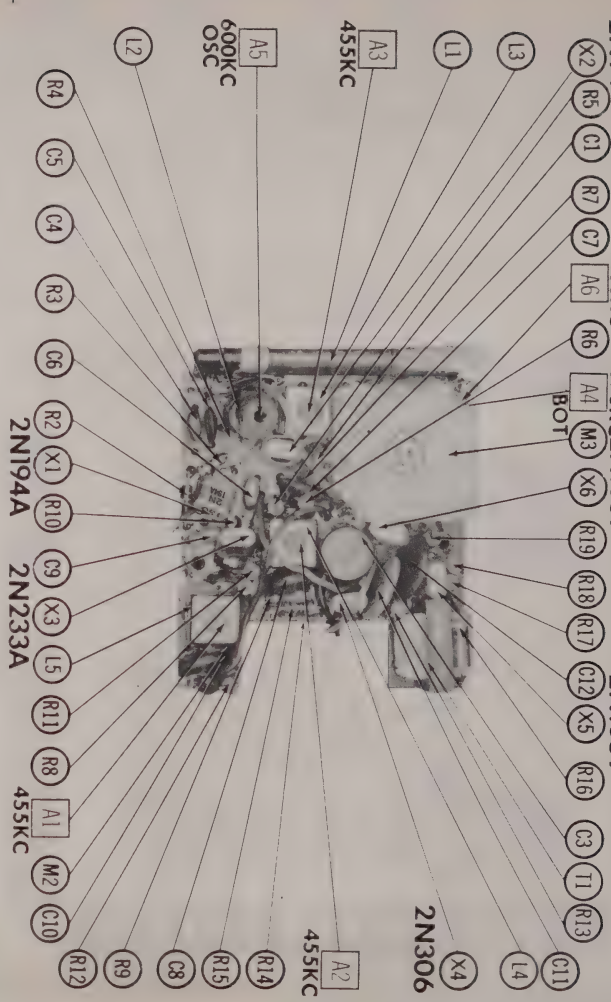
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Window	48674	Models 1205, 1206, 1207
Knob	48470-29	Tuning, Model 1202
Knob	48470-96	Tuning, Model 1203
Knob	48470-33	Tuning, Model 1204
Knob	48671-29	Tuning, Model 1205
Knob	48671-95	Tuning, Model 1206
Knob	48671-218	Tuning, Model 1207
Knob	48469-29	Volume, Model 1202
Knob	48469-96	Volume, Model 1203
Knob	48469-33	Volume, Model 1204
Knob	49332-29	Volume, Model 1205
Knob	49332-95	Volume, Model 1206
Knob	49332-218	Volume, Model 1207
Handle	48677-1	Model 1205, 1206, 1207
Cabinet Back	48467-29	Black, Model 1202
Cabinet Back	48467-96	Mint Green, Model 1203
Cabinet Back	48467-33	Red, Model 1204
Cabinet Back	48670-29	Black, Model 1205
Cabinet Back	48670-95	Ice Blue, Model 1206
Cabinet Back	48670-218	Coral, Model 1207
Cabinet Front	49453-29	Black, Model 1202
Cabinet Front	49453-96	Mint Green, Model 1203
Cabinet Front	49453-33	Red, Model 1204
Cabinet Front	49331-29	Black, Model 1205
Cabinet Front	49331-95	Ice Blue, Model 1206
Cabinet Front	49331-218	Coral, Model 1207

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder

SYLVANIA MODEL 45P18 (Ch. 664-1)

SYLVANIA MODEL
45P18 (Ch. 664-1)

SYLVANIA MODEL
45P18 (Ch. 664-1)

TRADE NAME	Sylvania Model 45P18 (Ch. 664-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 28 Watts, .3 Amp. @117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR TELEFUNKEN TW560 – PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT738

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •		RAYTHEON • SYLVANIA •		
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	V2 V3	Channel 1 Output Channel 2 Output	50EH5 50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	60	150	161-3041	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							
C2	100	25NP	161-1069	PRS7340	BR10015	TCN425		TVANS-1207.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C4	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C5	.004		BPD-004	DD-402	BYA10D4	CCD-392	B-240	5HK-D40
C6	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C7	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C8	.002		BPD-002	DD-202	BYA10D2	CCD-202	B-202	5HK-D20
C9	.004		BPD-004	DD-402	BYA10D4	CCD-392	B-240	5HK-D40
C10	.01		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

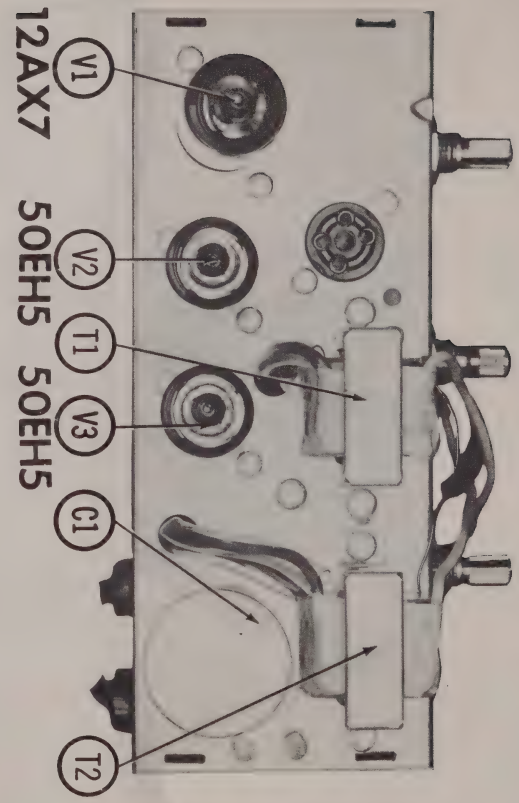
ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	3meg		153-0212	B-85			FC36A	Loudness, Channel 2
B	3meg			SR-85			RU36A	Loudness, Channel 1
C	Shaft			Not Req.			CS3500	
R2A	4meg		153-0260	B-86	A47-4meg-S	B11-240	U67	Balance
B	Shaft			Not Req.	KSS-3	SK1	Not Req.	
R3A	500K		153-0213	B-60	AD47-500K-S		FA55A	Tone, Channel 2
B	500K			SR-60	Not Req.		RU55A	Tone, Channel 1
C	Shaft			Not Req.	KSS-3		CS3500	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	100K				R10	68Ω			
R5	6.8meg				R11	100Ω			
R6	68Ω				R12	2200Ω 1W			
R7	100Ω				R13	100Ω 2W			
R8	100K				R14	22Ω 1W			
R9	6.8meg				R15	47Ω 2W			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	SYLVANIA PART No.	REPLACEMENT DATA
K1	Audio Coupling	.01mfd, .01mfd, 1000Ω, 1000Ω, 270K, 270K, 470K, 470K	190-0067	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2900Ω	3-4Ω	143-0098	A-3025①	A-3332①	26S58	S-12Z	① Drill new mounting hole(s).
T2	2900Ω	3-4Ω	143-0098	A-3025①	A-3332①	26S58	S-12Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	6"	PM	3-4Ω	539-0612	6A15	
SP2	6"	PM	3-4Ω	539-0612	6A15	
SP3	6"	PM	3-4Ω	539-0612	6A15	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SYLVANIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.065A	517-0028 *	1N1763 †	2F4 †	SR200 †	* Selenium † Silicon

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	SYLVANIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	916-0028	902-0012* (LP)	80TS	Not Req.	96T	Not Req.	12TLA-S	Not Req.	
		902-0013* (78 RPM)							

CABINETS & CABINET PARTS

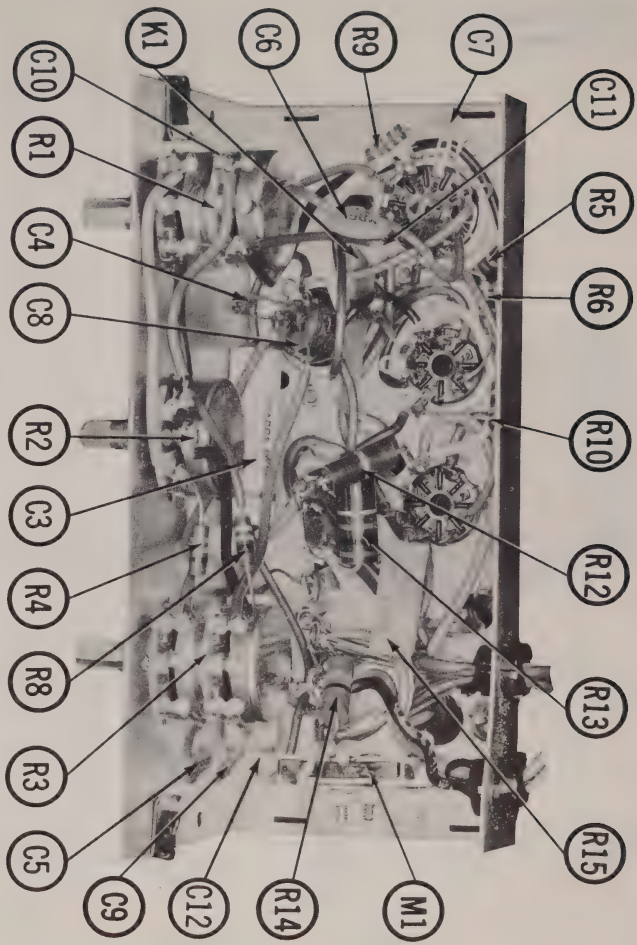
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	740-0383	
Spindle	922-0023	45 RPM

WIRING DATA

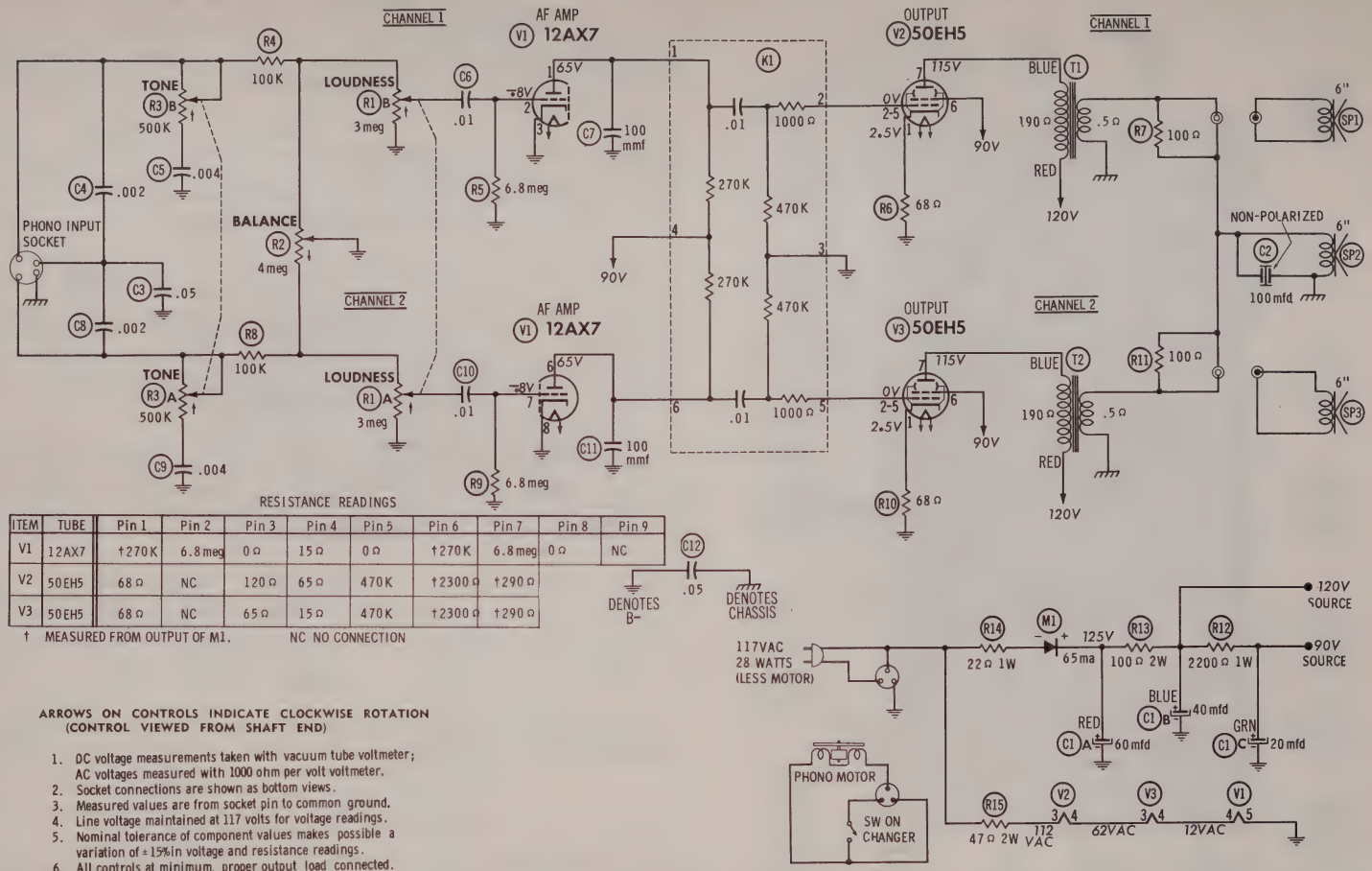
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS—BOTTOM VIEW



SYLVANIA MODEL 45P18 (Ch. 664-1)

FOLDER 14



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†270K	6.8meg	0Ω	15Ω	0Ω	†270K	6.8meg	0Ω	NC
V2	50EH5	68Ω	NC	120Ω	65Ω	470K	†2300Ω	†290Ω		
V3	50EH5	68Ω	NC	65Ω	15Ω	470K	†2300Ω	†290Ω		

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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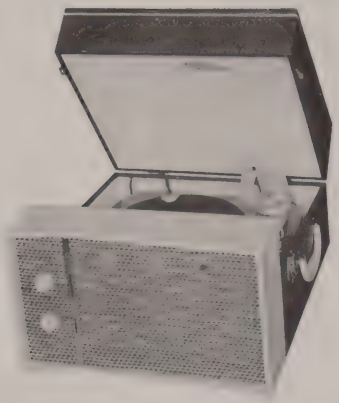
SYLVANIA MODEL 45P18 (Ch. 664-1)

PHOTOFACT® Folder

SYMPHONIC MODELS
115S, 1716, 1792

SYMPHONIC MODELS
115S, 1716, 1792



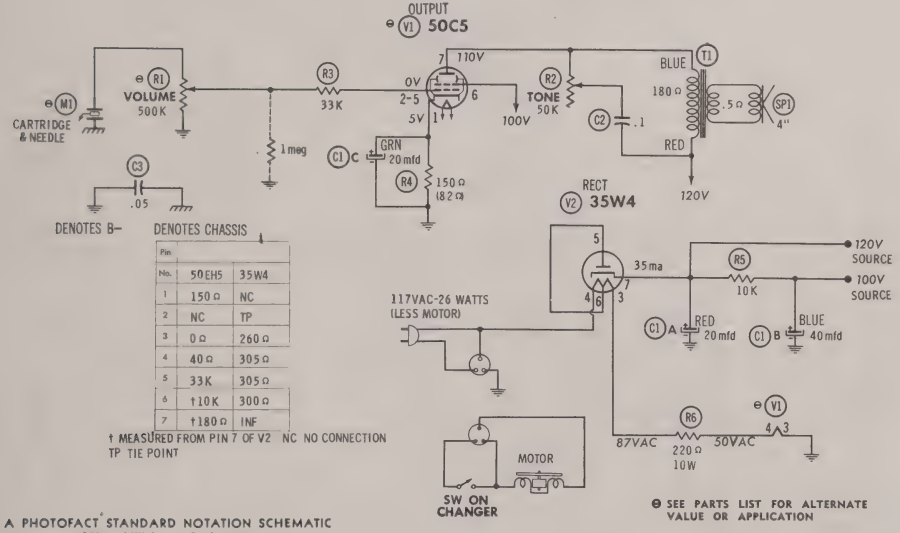
MODEL 1716

TRADE NAME	Symphonic Models 115S, 1716, 1792
MANUFACTURER	Symphonic Radio & Electronics Corp., 235 Jersey Ave., New Brunswick, N. J.
TYPE SET	AC Operated One Tube Phono Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 26 Watts, .25 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER UA20 USED IN MODEL 115S – SEE SIMILAR B. S. R. (USA) UA8 – PHOTOFACT SET 381 FOLDER 11 OR RECORD CHANGER MANUAL RC-11

FOR SERVICE INFORMATION ON RECORD CHANGER TW-503 USED IN MODELS 1716, 1792 – SEE SIMILAR TELEFUNKEN TW-560 – PHOTOFACT SET 371 FOLDER 12 OR RECORD CHANGER MANUAL RC-10

SYMPHONIC MODELS
115S, 1716, 1792



Pin No.	50EH5	35W4
1	150Ω	NC
2	NC	TP
3	0Ω	260Ω
4	40Ω	305Ω
5	33K	305Ω
6	†10K	300Ω
7	†180Ω	INF

† MEASURED FROM PIN 7 OF V2 NC NO CONNECTION
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

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SET 549 FOLDER 15

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Output	50C5 *

ITEM No.	USE	TYPE
V2	Rectifier	35W4

* Some Models may use 50EH5 in this application.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYMPHONIC PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	60	150	CE-101	PRS3800	BBRT84215	TCT3119	TDLT-7	TVA-3455	
B	40	150							
C	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C3	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYMPHONIC PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	VC-208	B-60	A47-500K-Z	Q13-133	U48	Volume Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	50K	½	VC-156	B-31	A47-50K-S	Q11-123	U35	Tone
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

① Some versions may use 3meg (Part #VC-308).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	33K			
R4	150Ω			(182Ω) *

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	10K	PW10-220	10W-SQ-220	
R6	220Ω 10W			

* Alternate Value.

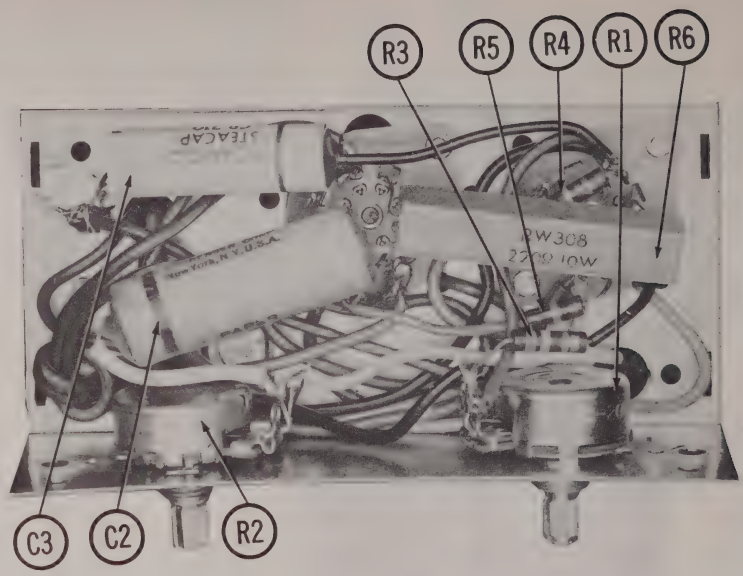
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA SYMPHONIC * PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2600Ω	3-4Ω	TR-170	A-3025	A-3332	24S52	S-12X	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA SYMPHONIC PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SP-401	4A1	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	SYMPHONIC PART No. CARTRIDGE	SYMPHONIC PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1	TO-45X	N8-1 * (LP)	420-TS-TB	N8-1 *	46T	Not Req.			① Alternate cartridge may be used in some Models.
		N8-3 * (78RPM)		N8-3 *					
	TO-222-FF ①	N8-1 * (LP)	420-TS-TB	N8-1 *	46T	Not Req.			
		N8-3 * (78RPM)		N8-3 *					

CABINETS & CABINET PARTS

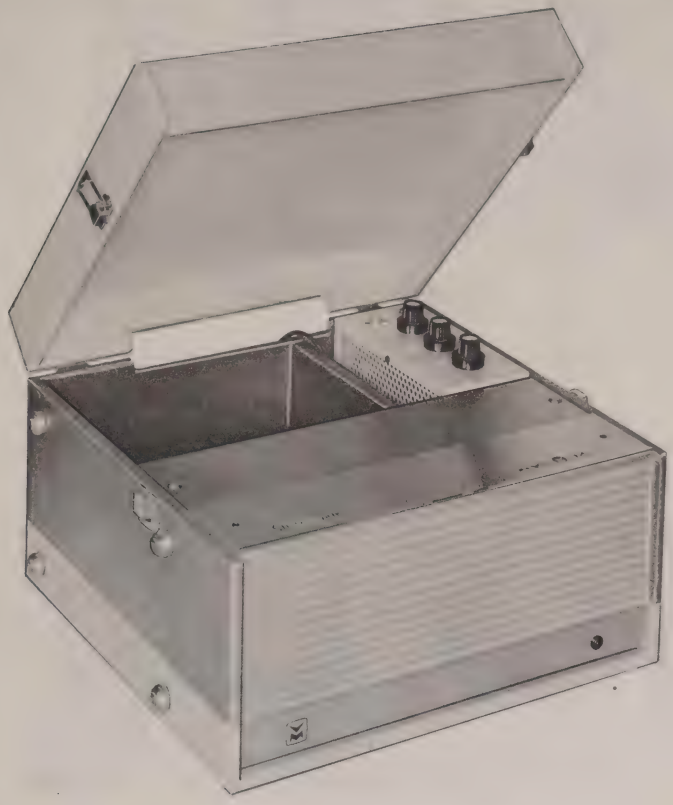
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	KN-392	Models 115S, 1792
Knob	KN-374	Models 1716

PHOTOFACT® Folder

V-M MODEL 168

V-M MODEL 168



V-M MODEL 168

TRADE NAME	V-M Model 168
MANUFACTURER	V-M Corp., 375 W. Main Street, Benton Harbor, Michigan
TYPE SET	AC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110 — 120 Volts AC, 60 Cycles RATING 31 Watts, .3 Amp. @117 Volts AC

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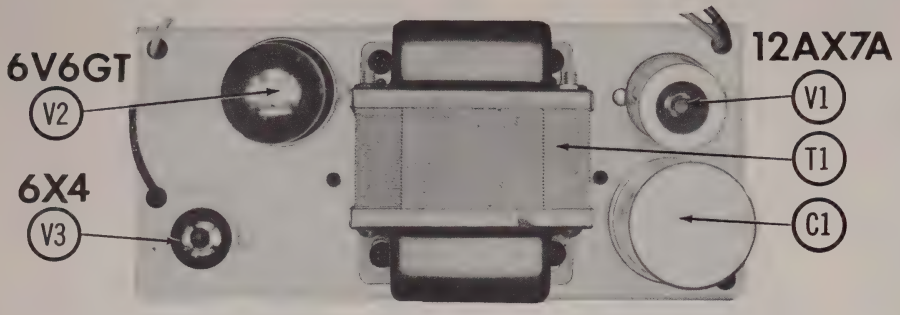
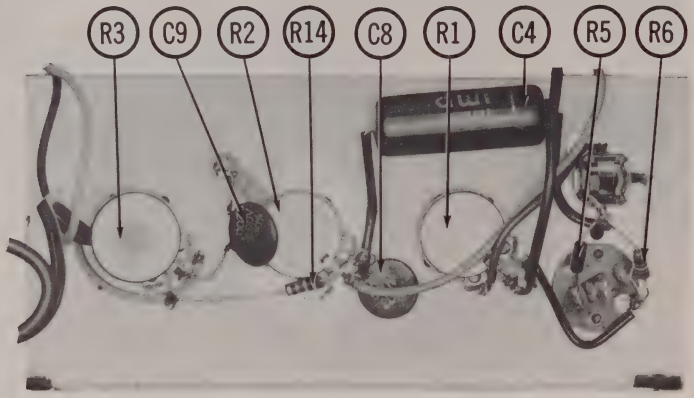
KX729

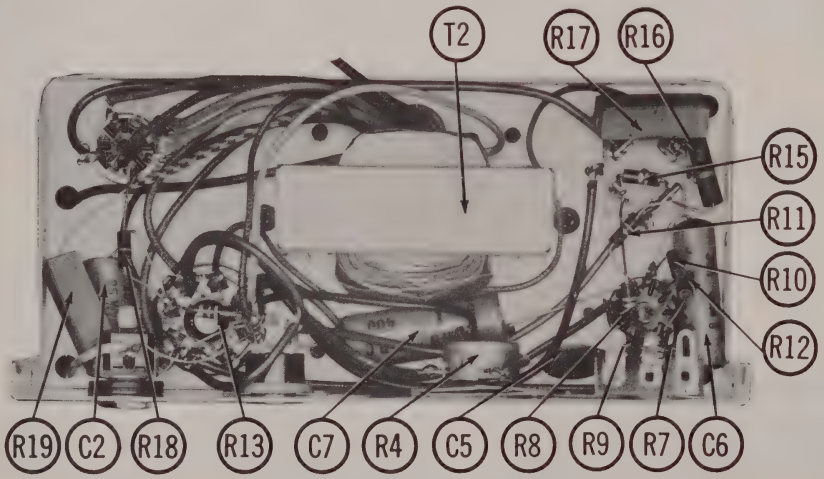
SET 549 FOLDER 16



CHASSIS-TOP VIEW



CONTROL PANEL



CHASSIS-BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	AF Amplifier	12AX7A
V2	Output	6V6GT
V3	Rectifier	6X4 (EZ90) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▫40	450	12045-5	AFH4-92-50	D0606	FP433.4	TMQ-4640	TVL-4769.4	①
B	▪30	300							
C	▲20	300							
D	20	450							
C2	10	25	12046	PRS1250	BBR10-25	TC22	TD-10-25	TVA-1204	
C3	2	100NP	12069	PRS7500	BBR4-150	TCN510		TVANS-1402.1*	

① In some versions, C1 may be 40-30-10-10mfd@450V (Part #12045).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	.47 200V		P288N-47		CUB2P47	2DP-5-474	GEM-2047	2TM-P47
C5	.0035		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C6	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C7	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C8	.0035		BPD-0033	DD-332	BYA10D33	CCD-332	B-235	5HK-D33
C9	.0035		BPD-0033	DD-332	BYA10D33	CCD-332	B-235	5HK-D33

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	12319	B-70	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R2A	1meg	½	12319	B-70	A47-1meg-Z	Q13-137	U53	Bass
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R3A	50K	½	12318	B-31	A47-50K-S	Q11-123	U35	Treble
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R4	150Ω	2(WW)	12361				FL200P	Hum Balance

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	1meg			
R6	680K			
R7	1meg			
R8	220K			
R9	1000Ω			
R10	2.2meg			
R11	150K			
R12	1500Ω			
R13	330K			
R14	47K			
R15	120K			
R16	10K 1W			
R17	1000Ω 5W	PW5-1000	5W-SQ-1000	
R18	22K			
R19	300Ω 5W	PW5-300	5W-SQ-300	

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	RATING SEC. 4	RATING SEC. 5	REPLACEMENT DATA V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V@ .3A	640VCT @ .040A DC	6.3V@ .6A	6.3V@ .8A			12678-1					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5700Ω	32Ω Tap@ 6-8Ω	12541B ①					① Alternate Part #12541

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA V-M PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"x 9"	PM	6-8Ω	8958-1	69A3Z8	
SP2	3½"	PM	14-16Ω	8959-5	3A15T	

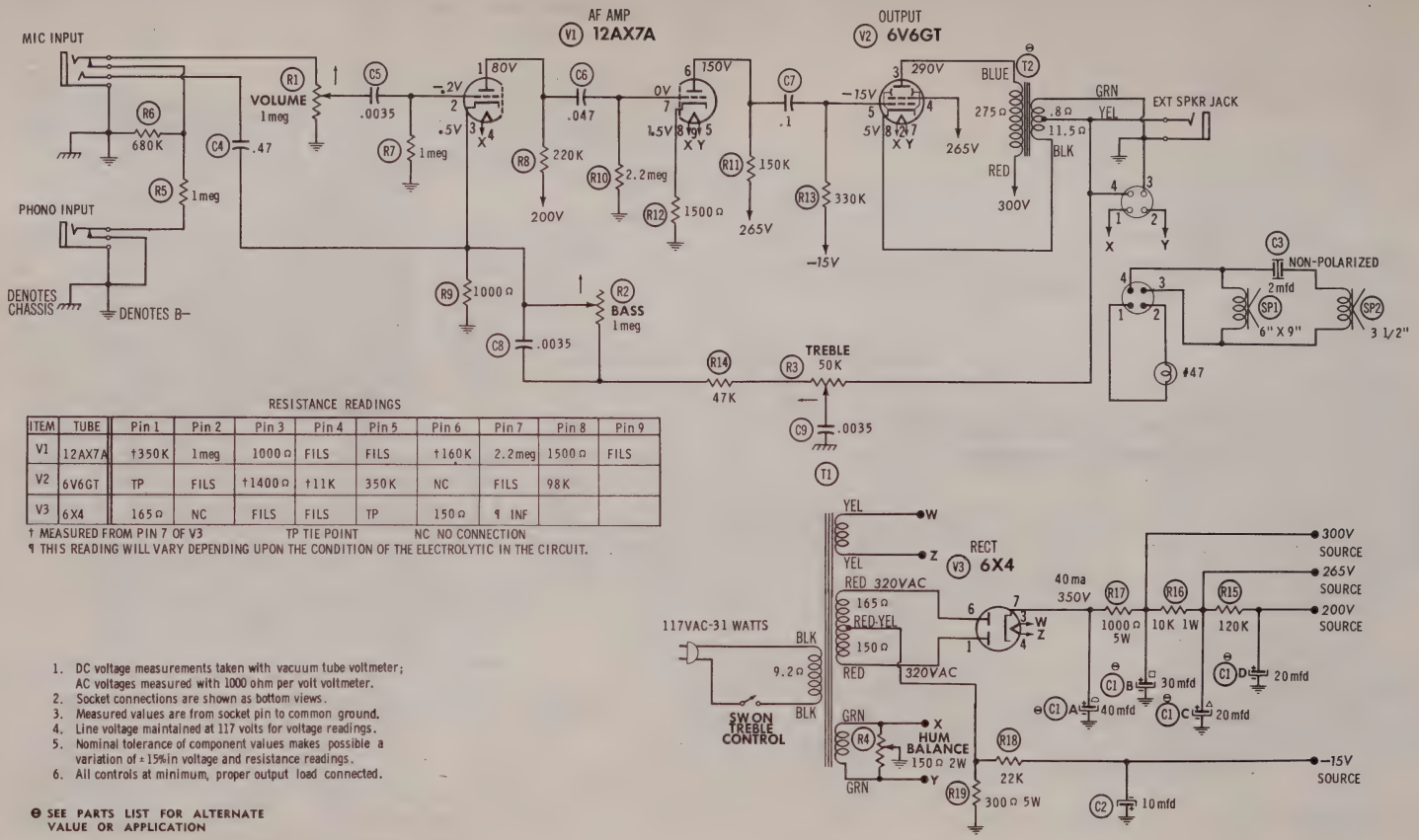
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	25207-A	
Cabinet	25206	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†350K	1meg	1000Ω	FILS	FILS	†160K	2.2meg	1500Ω	FILS
V2	6V6GT	TP	FILS	†1400Ω	†11K	350K	NC	FILS	98K	
V3	6X4	165Ω	NC	FILS	FILS	TP	150Ω	¶ INF		

† MEASURED FROM PIN 7 OF V3 TP TIE POINT NC NO CONNECTION

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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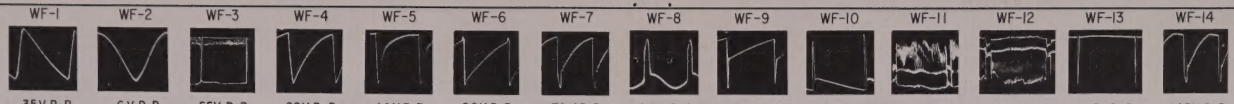
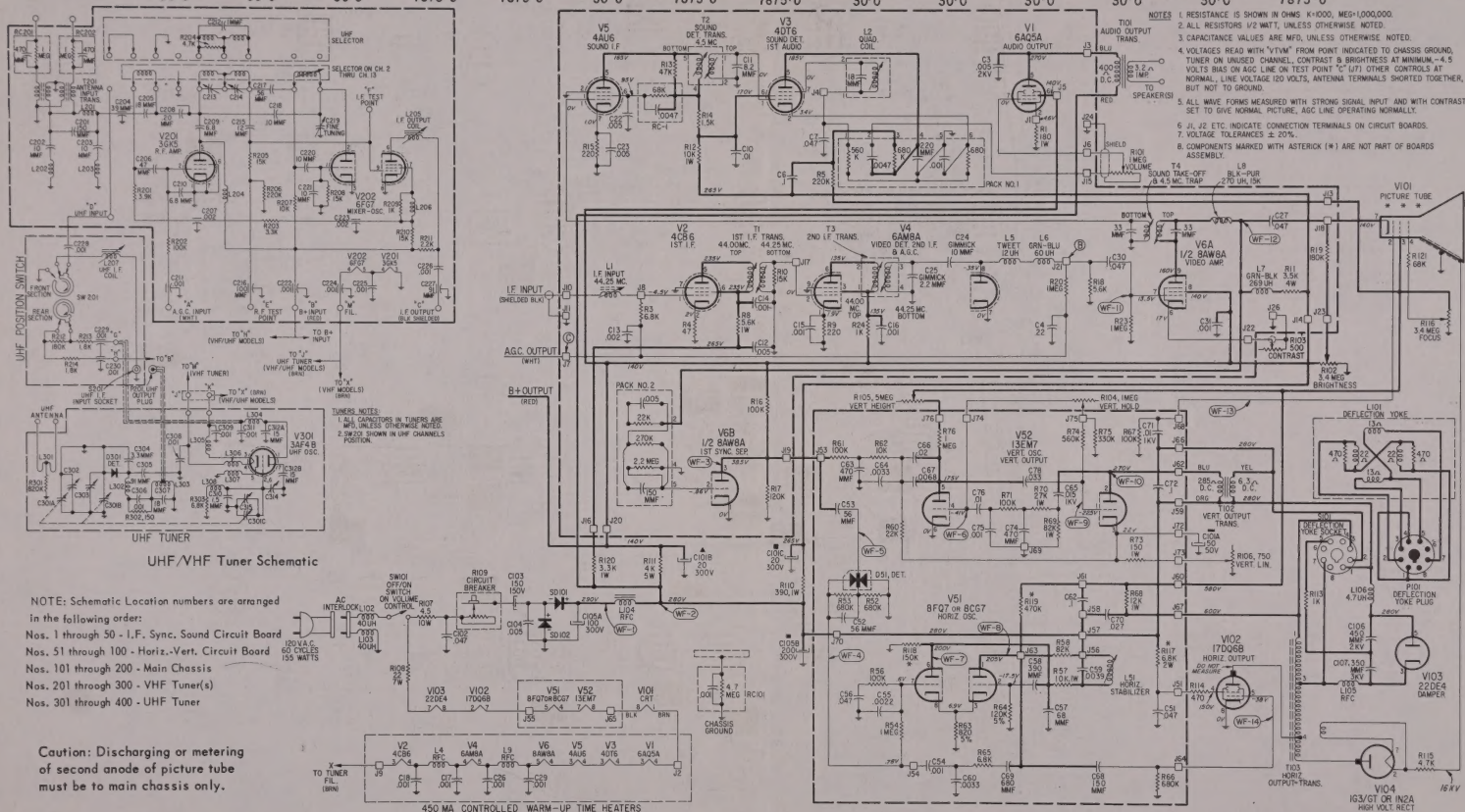
V-M MODEL 168




NOTES
1. RESISTANCE IS SHOWN IN OHMS K=1000, MEG=1,000,000.
2. ALL RESISTORS 1/2 WATT, UNLESS OTHERWISE NOTED.
3. CAPACITANCE VALUES ARE MFD, UNLESS OTHERWISE NOTED.
4. VOLTAGES READ WITH "VTVM" FROM POINT INDICATED TO CHASSIS GROUND, TUNER ON UNUSED CHANNEL, CONTRAST & BRIGHTNESS AT MINIMUM, -4.5 VOLTS BIAS ON AGC LINE ON TEST POINT "C" (J7) OTHER CONTROLS AT NORMAL, LINE VOLTAGE 120 VOLTS, ANTENNA TERMINALS SHORTED TOGETHER, BUT NOT TO GROUND.
5. ALL WAVE FORMS MEASURED WITH STRONG SIGNAL INPUT AND WITH CONTRAST SET TO GIVE NORMAL PICTURE, AGC LINE OPERATING NORMALLY.
6. J1, J2 ETC. INDICATE CONNECTION TERMINALS ON CIRCUIT BOARDS.
7. VOLTAGE TOLERANCES ± 20%.
8. COMPONENTS MARKED WITH ASTERICK (*) ARE NOT PART OF BOARDS ASSEMBLY.
V5 4AU6 SOUND I.F.
V3 4DT6 SOUND DET. 1ST AUDIO
V1 6AQ5A AUDIO OUTPUT
T2 SOUND DET. TRANS. 4.5 MC.
T1O1 AUDIO OUTPUT TRANS.
SPEAKER(S)
V2 4CB6 1ST I.F.
T1 1ST I.F. TRANS. 44.00MC. 44.25 MC.
T3 2ND I.F. TRANS.
V4 6AW8A VIDEO DET. 2ND I.F. & A.G.C.
V6A 1/2 8AW8A VIDEO AMP.
V1O1 PICTURE TUBE
V6B 1/2 8AW8A 1ST SYNC. SEP.
V52 13EM7 VERT. OSC. VERT. OUTPUT
V51 8FQ7 OR 8CG7 HORIZ OSC.
V102 17DQ6B HORIZ OUTPUT
V103 22DE4 DAMPER
V104 1G3/GT OR 1N2A HIGH VOLT RECT
T102 VERT. OUTPUT TRANS.
T103 HORIZ OUTPUT TRANS.
L101 DEFLECTION YOKE
P101 DEFLECTION YOKE PLUG
P102 DEFLECTION YOKE SOCKET
L105 RFC
L8 BLK-PUR .270 UH, 15K
T4 SOUND TAKE-OFF .8 4.5 MC. TRAP
R101 1MEG VOLUME
R102 3.4 MEG BRIGHTNESS
R103 500 CONTRAST
R116 3.4 MEG FOCUS
I.F. INPUT (SHIELDED BLK)
AGC OUTPUT (WHT)
B+ OUTPUT (RED)
PACK NO.1
PACK NO.2
R105 5MEG VERT. HEIGHT
R104 1MEG VERT. HOLD
D51, DET.
SW101 OFF/ON VOLUME CONTROL
R109 CIRCUIT BREAKER
SD101
SD102
AC INTERLOCK
120 V.A.C. 60 CYCLES 155 WATTS
CHASSIS GROUND
TO TUNER FIL. (BRN)
450 MA CONTROLLED WARM-UP TIME HEATERS
UHF POSITION SWITCH
UHF SELECTOR
UHF I.F. COIL
UHF I.F. INPUT SOCKET
UHF ANTENNA
UHF TUNER
V301 3AF4B UHF OSC.
V201 3GK5 R.F. AMP.
V202 6F07 MIXER-OSC.
V203 22DE4
V102 17DQ6B
V51 8FQ7OR8CG7
V52 13EM7
V101 CRT
V2 4CB6
V4 6AW8A
V6 8AW8A
V5 4AU6
V3 4DT6
V1 6AQ5A
TUNERS NOTES:
1. ALL CAPACITORS IN TUNERS ARE MFD. UNLESS OTHERWISE NOTED.
2. SW 201 SHOWN IN UHF CHANNELS POSITION.

UHF/VHF Tuner Schematic

NOTE: Schematic Location numbers are arranged in the following order:
Nos. 1 through 50 - I.F. Sync. Sound Circuit Board
Nos. 51 through 100 - Horiz.-Vert. Circuit Board
Nos. 101 through 200 - Main Chassis
Nos. 201 through 300 - VHF Tuner(s)
Nos. 301 through 400 - UHF Tuner

Caution: Discharging or metering of second anode of picture tube must be to main chassis only.

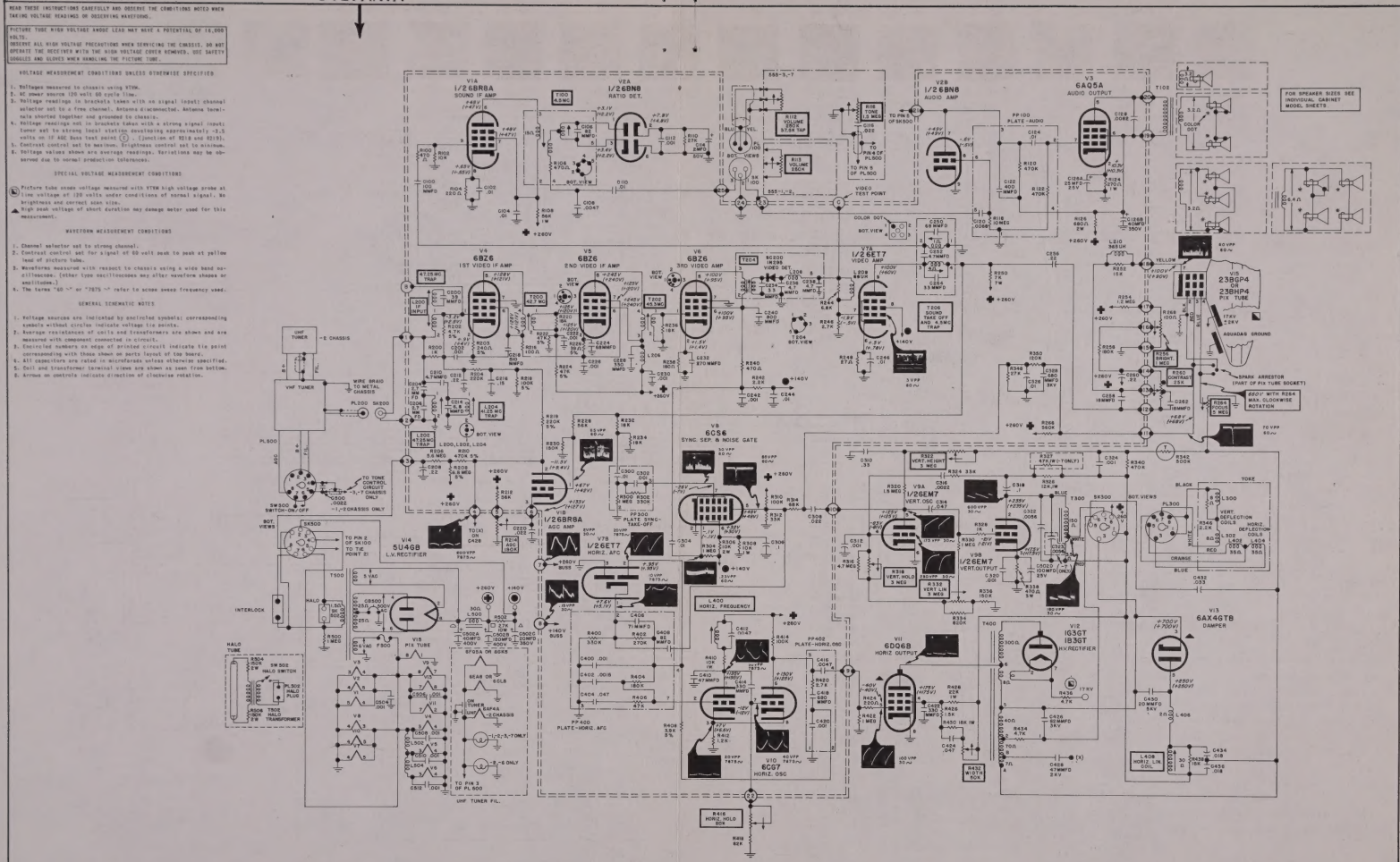
SILVERTONE CHASSIS 456.51780, 456.51781, 456.51782, 456.51783, 528.51780, 528.51781, 528.51782, 528. 51783

***19" Picture Tube - 19AYP4
19" Picture Tube - 19AXP4
23"Picture Tube - 23ALP4

Schematic Diagram Courtesy of Sears, Roebuck & Company

← SILVERTONE

SYLVANIA


READ THESE INSTRUCTIONS CAREFULLY AND OBSERVE THE CONDITIONS NOTED WHEN TAKING VOLTAGE READINGS OR OBSERVING WAVEFORMS.
PICTURE TUBE HIGH VOLTAGE ANODE LEAD MAY HAVE A POTENTIAL OF 18,000 VOLTS.
OBSERVE ALL HIGH VOLTAGE PRECAUTIONS WHEN SERVICING THE CHASSIS. DO NOT OPERATE THE RECEIVER WITH THE HIGH VOLTAGE COVER REMOVED. USE SAFETY GOGGLES AND GLOVES WHEN HANDLING THE PICTURE TUBE.
VOLTAGE MEASUREMENT CONDITIONS UNLESS OTHERWISE SPECIFIED
1. Voltages measured to chassis using VTVM.
2. AC power source 120 volt 60 cycle line.
3. Voltage readings in brackets taken with an signal input; channel selector set to a free channel. Antenna disconnected. Antenna terminals shorted together and grounded to chassis.
4. Voltage readings not in brackets taken with a strong signal input; tuner set to strong local station developing approximately -3.5 volts on 1F AGC Buss test point (X) (junction of R218 and R219).
5. Contrast control set to maximum. Brightness control set to minimum.
6. Voltage values shown are average readings. Variations may be observed due to normal production tolerances.
SPECIAL VOLTAGE MEASUREMENT CONDITIONS
Picture tube anode voltage measured with VTVM high voltage probe at line voltage of 120 volts under conditions of normal signal. No brightness and correct scan size.
High peak voltage of short duration may damage meter used for this measurement.
WAVEFORM MEASUREMENT CONDITIONS
1. Channel selector set to strong channel.
2. Contrast control set for signal of 60 volt peak to peak at yellow level of picture tube.
3. Waveforms measured with respect to chassis using a wide band oscilloscope. (other type oscilloscopes may alter waveform shapes or amplitudes.)
4. The terms "40 -" or "787.5 -" refer to scope sweep frequency used.
GENERAL SCHEMATIC NOTES
1. Voltage sources are indicated by encircled symbols; corresponding symbols without circles indicate voltage tie points.
2. Average resistances of coils and transformers are shown and are measured with component connected in circuit.
3. Encircled numbers on edge of printed circuit indicate tie point corresponding with those shown on parts layout of top board.
4. All capacitors are rated in microfarads unless otherwise specified.
5. Coil and transformer terminal views are shown as seen from bottom.
6. Arrows on controls indicate direction of clockwise rotation.
V1A 1/2 6BR8A SOUND IF AMP
V2A 1/2 6BN8 RATIO DET.
V2B 1/2 6BN8 AUDIO AMP
V3 6AQ5A AUDIO OUTPUT
V4 6BZ6 1ST VIDEO IF AMP
V5 6BZ6 2ND VIDEO IF AMP
V6 6BZ6 3RD VIDEO AMP
V7A 1/2 6ET7 VIDEO AMP
V7B 1/2 6ET7 HORIZ. AFC
V8 1/2 6BR8A AGC AMP
V9 6CS6 SYNC. SEP. & NOISE GATE
V10 6CG7 HORIZ. OSC
V11 6DQ6B HORIZ OUTPUT
V12 1G3GT/1B3GT H.V. RECTIFIER
V13 6AX4GTB DAMPER
V14 5U4GB L.V. RECTIFIER
V15 PIX TUBE
V16 23GP4 OR 23HP4 PIX TUBE
V3A 1/2 6EM7 VERT. OSC
V3B 1/2 6EM7 VERT. OUTPUT
VHF TUNER
UHF TUNER
-E CHASSIS
-C CHASSIS
SPEAKER ARRESTOR (PART OF PIX TUBE SOCKET)
SPARK ARRESTOR (PART OF PIX TUBE SOCKET)
AQUADAG GROUND
HALO TUBE
INTERLOCK
SWITCH-ON OFF
TO TONE CONTROL
TO VOLUME CONTROL
TO PIN 2 OF SK100 TO THE POINT (X)
TO PIN 3 OF PL500
TO PIN 5 OF PL500
TO PIN 8 OF SK500
TO PIN 6 OF PL500
VIDEO TEST POINT
COLOR DOT
BOT. VIEW
WIRE BRAID TO METAL CHASSIS
UHF TUNER FIL.
PLATE-AUDIO
PLATE-HORIZ. OSC
PLATE-HORIZ. AFC
PLATE-VIDEO
PLATE SYNC-SEP. AGC
1ST VIDEO SET
2ND VIDEO SET
3RD VIDEO SET
SOUND TAKE OFF AND 4.5MC TRAP
VIDEO AMP
HORIZ. FREQUENCY
HORIZ. LIN. COIL
HORIZ. HOLD
WIDTH
VERT. HEIGHT
VERT. LIN
VERT. HOLD
VOLUME
TONE
BRIGHT
CONTRAST
FOCUS
YOKE
VERT. DEFLECTION COILS
HORIZ. DEFLECTION COILS
BLACK
ORANGE
BLUE
RED
YELLOW
GREEN
FOR SPEAKER SIZES SEE INDIVIDUAL CABINET MODEL SHEETS

SYLVANIA MODELS 23L48, 23L51, 23L52, 23T41, 23T44, 23V42, 23V46, 23V50 (CH. 555-1, -2, -3, -5, -6, -7)

Schematic Diagram Courtesy of Sylvania Electric Products Inc.

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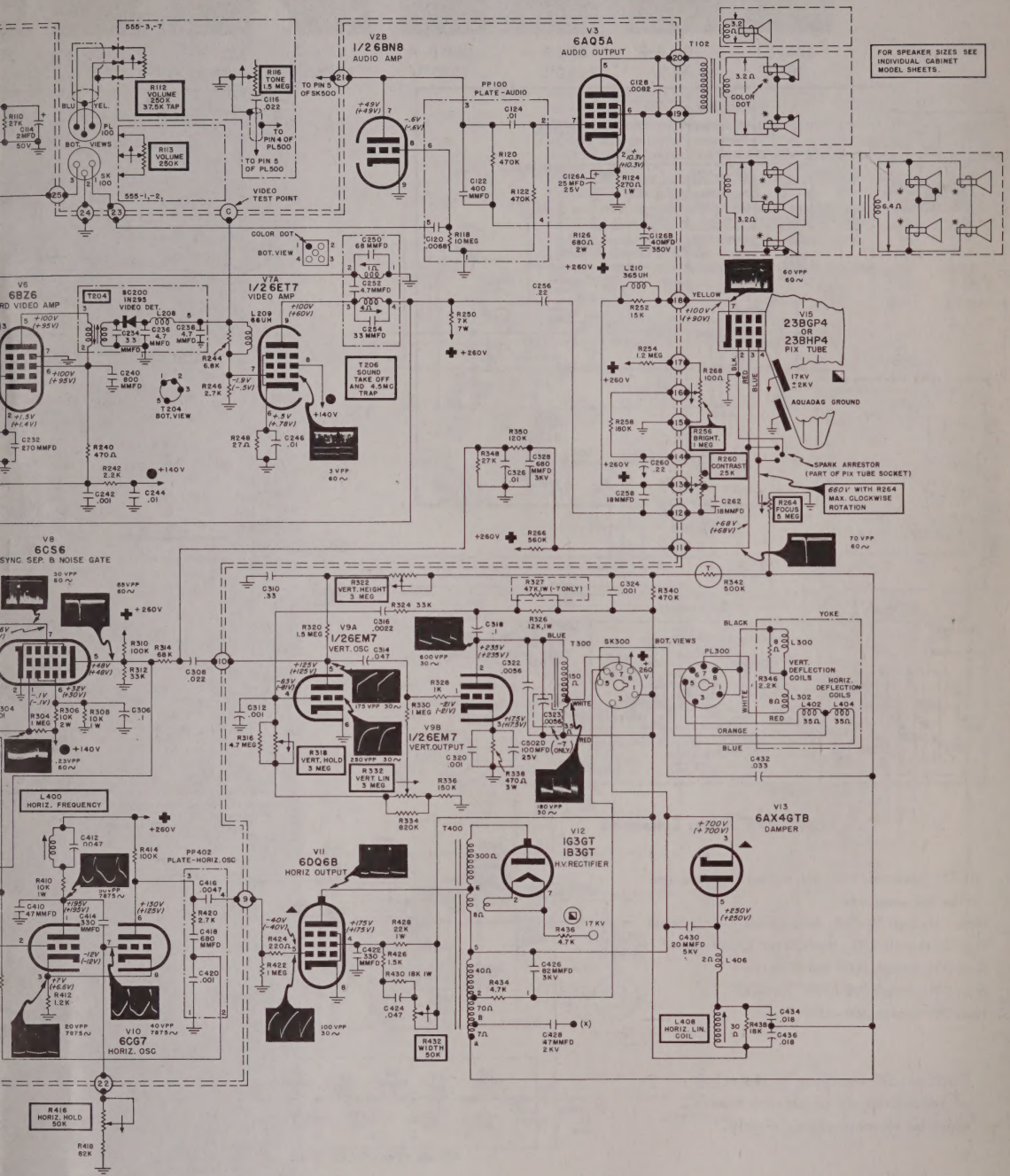
SET 549 FOLDER 17-S



Schematic Diagram Courtesy of Sylvania Electric Products Inc.